

THE IMPACT OF ESG SCORES AND FINANCIAL PERFORMANCE ON EARNINGS MANAGEMENT IN JAPANESE TECHNOLOGY FIRMS

CHRISTOPHER ARNOLD PANGEMANAN
DAVID DHARMA PUTRA
ELECTRA CHANDRA LAZARUS
KENNY FERNANDO

Sampoerna University, Pancoran, Jakarta Selatan, DKI Jakarta, Indonesia
kenny.fernando@sampoernauniversity.ac.id (correspondence author)

Received: July 01, 2025; Revised: September 15, 2025; Accepted: 1 October, 2025

Abstract: This study intends to examine whether environmental, social and governance (ESG) scores of Japanese electrical machinery sector firms affect their earnings management (EM). The analysis incorporates stakeholder theory and suggests that greater stakeholder orientation and higher profitability lower the incentives for opportunistic reporting. Research in developing nations has already established a mixed relationship between ESG and EM. This can mainly be attributed to institutions, disclosure regimes and consensus on measurement. Thus, Japan is an important and relevant setting for further research. The study, which employs panel data of Tokyo Stock Exchange (TSE) Electrical Machinery companies from 2020-2024 in order to reflect to Indonesia's context. Next, discretionary accruals are computed using the Modified Jones Model. We utilize ordinary least squares regressions with industry fixed effects and firm-clustered standard errors, controlling for leverage, firm size and return on assets. There is a negative association between ESG scores and EM because of improved monitoring pressure and increased transparency. Data are analyzed using STATA 17, and by examining ESG disclosures and financial performance at the same time, the study offers empirical evidence on how stakeholder-oriented practices may limit earnings manipulation in an emerging market. The results can be useful to regulators, auditors, and investors with regard to the ability of ESG indicators to predict earnings management risks.

Keywords: Earnings Management, ESG Score, Financial Analysis

Abstrak: Penelitian ini bertujuan untuk menguji apakah skor environmental, social, and governance (ESG) pada perusahaan sektor mesin elektrik (electrical machinery) di Jepang memengaruhi manajemen laba (earnings management/EM) perusahaan tersebut. Analisis ini menggunakan teori stakeholder yang menyatakan bahwa orientasi stakeholder yang lebih tinggi serta profitabilitas yang lebih baik akan menurunkan insentif untuk melakukan pelaporan yang oportunistik. Penelitian di negara berkembang telah menunjukkan hubungan yang beragam antara ESG dan EM, yang terutama disebabkan oleh perbedaan kelembagaan, rezim pengungkapan, dan konsensus pengukuran. Oleh karena itu, Jepang menjadi konteks yang penting dan relevan untuk penelitian lanjutan. Penelitian ini menggunakan data panel perusahaan sektor Electrical Machinery yang tercatat di Tokyo Stock Exchange (TSE) selama periode 2020–2024 sebagai upaya merefleksikan konteks Indonesia. Akrua diskresioner dihitung menggunakan Modified Jones Model, dan analisis regresi ordinary least squares (OLS) dengan efek tetap industri serta standard error yang dikluster pada level perusahaan digunakan dengan mengendalikan leverage, ukuran perusahaan, dan return on assets. Hasil penelitian menunjukkan hubungan negatif antara skor ESG dan EM yang disebabkan oleh peningkatan tekanan pengawasan serta transparansi. Data dianalisis menggunakan STATA 17. Dengan mengkaji pengungkapan ESG dan kinerja keuangan secara

bersamaan, penelitian ini memberikan bukti empiris mengenai bagaimana praktik yang berorientasi pada stakeholder dapat membatasi manipulasi laba di pasar berkembang. Hasil penelitian ini bermanfaat bagi regulator, auditor, dan investor terkait kemampuan indikator ESG dalam memprediksi risiko manajemen laba.

Kata kunci: Manajemen Laba, Skor ESG, Analisis Keuangan, Akrual Diskresioner, Data Panel, Pengawasan ESG

INTRODUCTION

Companies in Indonesia are facing increasing demands from investors, customers, and regulators that they act responsibly while still meeting profit targets set by the company itself. Environmental, Social, Governance (ESG), typically represented with the form of ESG score, is one indicator from the company as a commitment to their stakeholders. Past studies show that companies with better ESG performance are generally less likely to engage in earnings management (EM), both accrual-based and real operational forms. For instance, in China, companies with better ESG scores tend to have lower EM. This is a good thing when the companies are more visible to the market and are being analyzed (Sun et al., 2024). Mandatory ESG disclosure may also bring forth the transparency of information and even result in better discipline on EM, compared with one that is completely voluntary (Cui et al., 2025). These findings are consistent with the stakeholder theory: by taking stakeholders seriously, companies make it less favourable and more costly for information to be opportunistic (Erraja et al., 2024).

The international picture is mixed, especially in developing countries. Applying the research in Vietnam context, Nguyen et al. (2024) showed that there is an earnings opacity positively influences ESG disclosure decisions, suggesting that managers use ESG information to legitimize behaviour rather than to honest reporting. Disclosure quality also matters for Indian companies, where less readable ESG reports are associated with more EM and higher spending on ESG is linked to more readability

(Dsouza et al., 2025). Also, the conflicting ESG scores by data providers may similarly weaken or change the anticipated negative ESG to EM relationship as it pulls up monitoring noises and agency costs (Mao et al., 2024). Together, this research shows that institutional settings, measurement choices, and disclosure policies can impact the observed ESG-EM relationship.

Most recent papers test ESG to earnings and management or relate ESG to firm performance, but very few place ESG score and financial performance together as the main, joint predictors of EM especially for Indonesia. Results from other emerging markets also show that context and measurement choices matter. For example, mandatory and voluntary ESG disclosure regimes can change how much ESG constrains EM (Cui et al., 2025). The readability of reports may show a lack of clarity, and less readable ESG reports tend to come with more EM (Dsouza et al., 2025). The conflicting rating by ESG data providers can weaken the expected ESG-EM relationship by adding noise (Mao et al., 2024). Such insights also imply that in the emerging economy of Indonesia with changing reporting environment and pressure from their stakeholders, it is a relevant setting to examine whether ESG score and ROA together predict earnings management after careful controls and robustness checks.

Despite the growing body of literature, there is clearly a gap in the current research. Most existing studies look at the ESG-EM relationship or the financial performance-EM relationship separately. There's only a few parameters that treat ESG scores and financial performance like the ROA as a joint predictor of earnings management within one model. This

gap is important because from a stakeholder theory perspective both a monitoring pressure (captured by ESG) and an incentive pressure (captured by ROA) act simultaneously to influence managers' reporting of earnings. When only one of the predictors is to be studied we may get a biased result. Moreover, most of the existing evidence is centered in China and Western economies while research into other Asian markets is limited. Japan is considered a highly suitable country for our analysis since it has attracted several researchers due to its well-developed stock market and strong corporate governance reforms in recent years. However, Japan's ESG reporting environment is not as entrenched as that in Western countries. The results of this research, sourced from Japanese data in the TSE Electrical Machinery sector, can also be referenced by Indonesia. Given the similarities in their path of growing ESG awareness and developing capital markets, Indonesia can glean insights from this study. The findings of this study using Japanese data from the TSE Electrical Machinery could become a useful reference for Indonesia. Indonesia's capital market is rapidly developing while ESG awareness is also increasing in the country with a comparable trajectory.

Guided by this gap, this study asks: Do ESG score and financial performance (ROA) jointly predict earnings management in Japanese listed non-financial firms? Specifically, this study evaluates on accrual-based EM and real activity EM and use a numeric ESG score together with lagged ROA as the main predictors, while controlling for size, leverage, market-to-book, auditor type, board independence, and industry/year effects. The study fills a theoretical gap by testing stakeholder theory in an emerging-market setting using transparent secondary data. From a practical view, the results can guide investors and auditors to target monitoring toward low

ESG or weak ROA firms and give regulators evidence to refine sustainability reporting and assurance policies in Japan. The subsequent sections talk about previous research and how the hypothesis was formed. Then, followed by the research method, the results, the discussion, and the conclusion.

This study contributes in several ways. The application of stakeholder theory is developed theoretically and empirically in this paper. It does so by testing the same in quantitative study of Japanese electrical machinery firms, a setting that is not commonly examined in literature of ESG-EM. In this regard, inclusion of both ESG score and ROA as joint predictors captures both the monitoring and incentive mechanisms that the stakeholder theory suggest. This offers a comprehensive illustration when applied to the combined predictor model. Additionally, from a practical perspective, the findings suggest that investors and auditors should be able to pinpoint firms which are more prone to earnings management by examining their ESG scores and profitability levels together. Tight audit scrutiny and closer investment screening may be warranted for firms with low ESG scores and poor financials. In terms of policy, the results could offer regulators in Japan and Indonesia proof of whether stronger ESG disclosure standards might contribute to the reduction of earnings manipulation and better overall financial reporting quality in each capital markets.

LITERATURE REVIEW

2.1 Stakeholder Theory, ESG Performance and Earnings Management

The stakeholder theory suggested by Freeman (2010a) holds that a firm must consider the interest of all groups whose well-being affects, or is being affected by, the company. When a firm's commitment to its stakeholders,

namely its investors, employees, customers, regulators, is sincere, the reputational and monitoring pressure on the firm automatically enhances. As a result, opportunistic reporting loses its shine for them. ESG performance refers to a company's performance in environmental, social and governance aspects. A firm's reputation is based on its ability to manage environmental impact, employee and society relations, and corporate governance practices. Companies with higher ESG performance often exhibit a stronger ethical focus and lower risk exposure. Earnings management refers to influencing the monetary results in a particular desired manner. It may be accomplished by selecting various options in accounting or altering real business activities. Excessive financial manipulation may weaken the credibility of financial statements and mislead stakeholders regarding firm performance.

In accounting, this suggests that a higher ESG score is expected to reduce earnings management (EM), as external stakeholders are becoming increasingly attentive to both firms' financial and non-financial behavior (Erraja et al., 2024). Furthermore, financial performance which can be measured through return on assets (ROA) is also expected to have a negative connection with EM. More profitable firms generally experience less pressure to meet earnings targets. Hence, there is not much incentive to manipulate reported results. The increased economic power and more stakeholder orientation are expected to lead to lower earnings management. To clarify the relationship, it is essential to understand that EM can be derived using two general paths. To start with managers use different estimates like allowances, provisions and the method of depreciation as accounting managers change the reported earnings of different periods without fees changing the actual business activities of the firm. In addition, managers may undertake

real-activity EM by manipulating operational decisions. For instance, managers may overproduce to reduce average cost per unit or postpone discretionary expenditures to meet short-term profit targets (Roychowdhury, 2006). When either of these forms of manipulation masks risks or distorts investment-related decisions, they can damage the firm's long-term value. According to stakeholder theory, an enhanced commitment to ESG should lower both accrual-based and real-activity EM. This is because stakeholders expect ethical behavior along with transparent and accurate financial statements.

Stakeholder theory also functions through information and credibility. Research has concluded that companies that devote their resources to ESG practices disclose more voluntary or non-financial information regularly. Moreover, they also interact with analysts and the press on a greater level than companies less involved with ESG practices. This minimizes the information gap between firm and stakeholders and increases the expected misreporting cost making EM option less attractive. Simultaneously, stakeholder involvement creates legitimacy with key stakeholders. Managers realize that losing reputation in public because of any financial manipulation would cost them more than the case of not achieving target earnings in the short term. So, they are more inclined to choose truthful reporting rather than opportunistic manipulation (Erraja et al., 2024).

Another important mechanism is the pressure to increase incentives for managers. When a company's profitability is weak, managers are more likely to reach performance benchmarks through the use of discretion accruals or real-activity manipulation. Greater profitability alleviates this pressure and gives managers more flexibility for honest reporting. In this analysis, the researchers have treated ESG

as the main explanatory variable and ROA as a performance control variable. This allows them to keep a clear focus on stakeholder monitoring while not ignoring the incentive channel. Stakeholder theory generates testable predictions for the Japanese case, which as ESG-related transparency rises and the market improves its ability to detect opportunism, high ESG scores should be negatively associated with EM. It is significant to test this in Japan considering that the stakeholders engagement practices and standards for ESG reporting are still in development. Therefore, the insights can be a basis for reflection in Indonesia.

2.2 Hypothesis Development

Recent studies generally find that higher ESG scores lower the incidence of earnings management. The explanation of this relationship extends beyond stakeholder theory; it also encompasses signaling theory. Based on Chinese listed firms, the study finds a negative association between ESG scores and earnings management. The impact is greater for firms that are followed by a large number of analysts, which signals the monitoring role of stakeholders (Sun et al., 2024). Regulations regarding institutions are also significant. Mandatory disclosure of ESG, for example, enhances the transparency and discipline of earnings management more effectively than voluntary regimes (Cui et al., 2025). In the studies also found that in some developing countries, the direction can be reversed. Vietnam's managers may resort to ESG as a deceptive measure to amplify ESG disclosure through earnings opacity (Nguyen et al., 2024). These contradictory findings suggest that context matters. With this in mind, Japanese offers a useful context to investigate whether ESG is really a monitoring mechanism or merely a signaling device. The findings from Japan can then be reflected to the case of Indonesia, which

may face similar dynamics. As we compare across these studies, it is obvious that the ESG-EM relationship is not uniform and dependent on the institution. In the setting studied by (Cui et al., 2025), which features strong enforcement of regulations and mandatory ESG disclosure in the country's legal framework, ESG seems to impose a real constraint on earnings manipulation. In nations where ESG disclosure tends to be voluntary and enforcement weak as in the case of Vietnam ((Nguyen et al., 2024), ESG may be a kind of impression management rather than a genuine commitment to transparency.

The quality of ESG information is also a factor. According to Dsouza et al. (2025), when ESG reports are less readable, they tend to co-vary with higher EM; some firms use complex words to cover their systematic poor practices. Mao et al. (2024) show that when firms get conflicting ESG scores from different agencies, the power of ESG data to monitor corporate behavior weakens. In short, these results suggest that three things are needed for ESG to effectively reduce the EM. The ESG-enhanced regulatory framework, consistent and reliable measurement of ESG, and the clear communication of ESG activities. Japan has recently implemented reforms to its governance and built up its ESG reporting infrastructure. As such, its current position makes it an interesting case to examine.

Institutional rules also shape the connection between ESG and EM. Mandatory disclosure results in a minimum standard and improves comparability between firms which enhances the monitoring role of ESG information in the financial market (Cui et al., 2025). Measurement choices can influence your findings. Mao et al. (2024) suggested that when divergence among ESG ratings is high, lessening the degree of the negative relationship between ESG and EM, the responsible

justification quality increases. One of the factors that was also found to be important was the quality of communication. Dsouza et al. (2025) find that less readable ESG reports are associated with more EM and that better reading ESG spending is associated with better readability of reports. To sum up, the way companies disclose something also has an influence over stakeholder discipline on managers and the decision-making.

Overall, existing studies indicate that ESG disclosure may mitigate the economising on earnings through stronger stakeholder monitoring and credible market signalling. Meanwhile, financial performance is also important because firms with profits face lower pressure to manipulate earnings. Drawing on the theoretical arguments and empirical evidence presented above, the present study seeks to investigate whether the ESG score is associated with lower earnings management in Japanese listed firms from the TSE Electrical Machinery sector, with the aim of reflecting the findings upon Indonesia's context, after controlling for the firm characteristic and performance. The following hypothesis is proposed as following:

H1: A higher ESG score negatively affects companies' level of earnings management.

RESEARCH METHOD

3.1 Data Collection and Sampling Method

The current study adopts a quantitative panel data approach focusing on firms listed in the Tokyo Stock Exchange (TSE) Electrical Machinery sector. Japan was chosen as the research setting given its well-developed capital market with increasing ESG awareness. The TSE is becoming active in promoting reforms in corporate governance. The results of this Japanese context are not merely one-off studies, argue the authors, but can act as a reference for Indonesia, which has a similar trend of

increasing stakeholder pressure and evolving sustainability reporting requirements. The sample comprises firms that remain listed subsequently for at least three consecutive years during the observation window for which annual audited accounts and sustainability/ESG reports are available, and for which were available data to calculate each of the EM proxies and financial ratios. Owing to their differing accounting policies and accrual schemes, banks and other financing institutions are excluded. The manual collection of items (in IDR) from annual reports and the Indonesia Stock Exchange.

For ESG data, we collect the Thomson Reuters Refinitiv ESG Score for each firm-year observation as our primary source. Thomson Reuters was chosen as the source due to their coverage of Asia, methodology consistency at different reporting times, and independent third-party ratings which cannot be constructed by the company (self-reporting bias) like other indices. A GRI-style index of ESG disclosures is manually created wherever the Thomson Reuters score is not available. The observations containing missing core variables were omitted and extreme ratios were winsorized at the 1st/99th percentiles. All regressions use robust standard errors at the firm level.

3.2 Sample Selection

In this study, the researchers gather data from publicly listed companies on the Tokyo Stock Exchange (TSE) that published ESG reports during the observation period (2020-2024). The initial sample selection will be extracted from Thomson Reuters data for publicly listed companies in Japan in the period 2020-2024 which included 4249 companies within 11 different industries.

Table 1. Sample Selection Process

Sample Criteria	Number
Observation period (2020-2024)	5
Number of Companies	4249
Companies Without ESG Data	-3613
Companies Without ESG Complete Data	-200
Companies Not in Electrical Machinery Sector	-403
Total Sample	33
Total Observations	165
Adjustment for Missing/Incomplete Data	-9
Total Observations (Adjusted)	156

Source: Processed by the authors (2026)

The authors determine the final data based on screening and filtering of the available data. According to the authors, only companies that provide information related to variables that the authors require in this research in 2020-2024. The first sample of firms comprised of 4249 companies listed on TSE. Exclusion of companies without ESG available data was done first, removing 3,613 companies. The remaining companies followed the same exclusion criteria to reject an additional 200 companies which did not disclose entire ESG data in the observation period. Moreover, to maintain consistency, the 403 companies not belonging to Electrical Machinery sector also dropped. The research employs balanced panel data to ensure comparability of firms and years. Accordingly, these 33 companies have a total of 156 firm year observations for this research after filtering the data. The data that has been finalized after being screened and filtered by criteria can be found in Table 1.

3.3 Research Variables

This with dependent independent and control variables to evaluate the influence of ESG score and financial performance as predictors on earnings management among Electrical Machinery firms listed in the Tokyo Stock Exchange (TSE). In this research, the dependent variable is earnings management (EM), which is proxied by discretionary accruals (DACC). Managerial discretion used in

accounting is referred to as discretionary accruals. It represents the portion of total accruals that can be controlled further by the management accounting representatives, which is the most widely used measure in literature (P. M. Dechow et al., 1996; Jones, 1991). Discretionary accruals are used because they measure the extent to which managers deviate from normal accrual patterns, which reflects the degree of opportunistic financial reporting. The estimation of discretionary accruals is done using cross-sectional Modified Jones Model (P. M. Dechow et al., 1996; Kothari et al., 2005) in this study as this model has been widely used across diverse country settings and is robust in detecting earnings manipulation (Gras-Gil et al., 2016; Sun et al., 2024). A higher absolute value of DACC indicates greater earnings manipulation, whereas values closer to zero suggest more faithful and conservative financial reporting.

The ESG score retrieved from Thomson Reuters Refinitiv is the primary independent variable used in this study (Fernando et al., 2022). The ESG score is a common numerical measure ranging from 0-100. A higher score implies a stronger ESG performance as well as a better disclosure quality overall. Due to its extensive coverage of the Asian market and consistent methodology used across various reporting periods, it was decided to rely on Thomson Reuters Refinitiv data. It is also an independent third-party rating to avoid the self-

reporting bias found in indices constructed by the company itself (Mao et al., 2024). Thomson Reuters assesses firms based on their environmental performance, social performance and the quality of their governance, which are combined into an overall ESG rating. Grouping values from the same source improves cross-firm and cross-year comparability across years. In accordance with stakeholder theory, this study predicts that firms with high ESG scores will have a lower magnitude of earning management as high degree of commitment towards ESG will smoothen the functioning of firms and raise the reputational cost of opportunistic reporting (Erraja et al., 2024).

Using leverage (LEV), firm size (FS), and return on assets (ROA) as control variables, this study distinguishes the effect of ESG scores on earnings management from other company-level attributes known to influence accruals behavior (P. Dechow et al., 2010). This study employs leverage because firms that rely heavily on debt financing face more restrictive debt covenants and greater refinancing pressure. This imposes greater managerial incentives to manipulate reported earnings to avoid covenant violations (DeFond & Jiambalvo, 1994). As a result, leverage is typically accounted for in studies of earnings management so that the estimated effect of ESG is free of reporting due to debt issues. In this research, the leverage is calculated by taking the total liabilities to total

assets at year-end. Firm size is another control variable in this research. As larger firms are subject to more political scrutiny on the part of the other interest social groups, they tend to make more disclosures than smaller firms, making depreciation choice more visible (Watts & Zimmerman, 1986). Moreover, larger companies have higher levels of accruals due to the complexity of their activities.

The natural logarithm of total assets is used to measure firm size (FS) in this study to ensure comparability across firms of varied scales and to reduce data skewness. The utilization of the natural logarithm helps to obtain a more normal distribution that is better for regression. The most recent control variable is return on assets (ROA). ROA is used an indicator for profitability which is net profit divided by total assets. The more unprofitable a firm is, the greater is the pressure on it to meet its earning targets, which leads to a higher incentive for manipulation of earnings (Kothari et al., 2005). Taking ROA into account directly in the main regression model, rather than in the accruals estimation, improves the accuracy and robustness of the ESG coefficient estimate.

The current study expects a higher ESG score has a considerable negative effect on discretionary accruals which indicates that stronger commitment to ESG reduces the level of earnings management. Table 2 shows the research variables employed in this research.

Table 2. Operating Variables

Variable Type	Variable	Research Variable	Measurement	Reference
Dependent	Earnings Management	Discretionary Accruals (DACC)	Modified Jones Model	
Independent	ESG Score	ESG Score (0-100)	Thomson Reuters Refinitiv	
Control	Leverage	LEV	Total Liabilities / Total Assets	
Control	Firm Size	FS	ln(Total Assets)	
Control	Return on Assets	ROA	Net Income / Total Assets	

Source: Processed by the authors (2026)

3.4 Model Specification

In order to test H1 that ESG does negatively impact companies' level of earnings management, this paper adapts the regression specification of Gras-Gil et al. (2016) based on the Modified Jones Model (P. Dechow et al., 2010; Jones, 1991). The specification also draws on the performance adjusted discretionary accrual framework of Kothari et al. (2005), which are:

$$DACCit = \beta_0 + \beta_1 ESGit + \beta_2 LEVit + \beta_3 FSit + \beta_4 ROAit + \beta_5 \text{SIZEit} + \beta_6 DI + \epsilon it$$

Here, DACCit is discretionary accruals for company i in year t, CSRit is the ESG score (0-100), LEVit stands for leverage which total liabilities end of year divided by total assets end of year, SIZEit is the natural logarithm of total assets in year t, ROAit is return on assets by dividing net income with total assets, DI are dummy industry capturing sector effects, and ϵ is error.

The parameter to be estimated is β_1 . Viewing from the stakeholder point of view, we predict that $\beta_1 < 0$: firms attaching more importance to ESG just have less earnings management. This study estimates the model by OLS with company clustered standard errors that are robust to heteroskedasticity, using the approach recommended by Petersen (2009) for panel data estimation in corporate finance research, and we retain industry dummies in order to absorb sectoral effects.

3.5 Dependent Variables

The dependent variable in this study is earnings management (EM) proxied by discretionary accruals (DACCit), which are values from earnings management. In order to estimate their discretionary accruals, this study follows the computation with the cross sectional Modified Jones (P. Dechow et al., 2010; Jones,

1991) approach. This model has found extensive application in the study of earnings management in different country settings (Gras-Gil et al., 2016; Kothari et al., 2005; Sun et al., 2024), which regresses the total accrual from the revenue (REV) subtracted by account receivables (AR) added with plant, property, equipment (PPE), and divided by total assets on the prior period. The steps to compute total accruals from cross sectional Modified Jones (P. M. Dechow et al., 1996):

$$T \quad ACit = \Delta CAit - \Delta Cashit - \Delta CLit - \Delta STDit - Depit$$

Next, to find the coefficient from the regression of total accrual (TAC) using cross sectional Modified Jones model, where to estimate the components of non-discretionary value from total accrual:

$$T \quad ACit_{i,t-1} = \beta_0 + \beta_1 \Delta REVit_{i,t-1} + \beta_2 PPEit_{i,t-1} + \epsilon it$$

Using the regression coefficients above, non-discretionary accruals (NDACit) can be computed with:

$$NDACit = \beta_0 + \beta_1 \Delta REVit - \Delta ARit_{i,t-1} + \beta_2 PPEit_{i,t-1}$$

Therefore, the value of discretionary accruals can be computed with:

$$DACCit = T \quad ACit_{i,t-1} - NDACit$$

Where DACCit stands for discretionary accrual, $\Delta CAit$ is the change in total current assets, $\Delta Cashit$ is the change in cash and cash equivalents, $\Delta CLit$ is the change in total current liabilities, $\Delta STDit$ is the change of short term debt, Depit is depreciation and amortization expense, T AC is total accruals, β_0 is the constant, β_m is the coefficient on the m-th regressor, ΔAR is the change in account receivables, PPE is gross property, plant,

equipment, ε is the error term, $A_{i,t-1}$ stands for lagged (prior-year total assets), and finally, NDACit is non-discretionary accruals.

3.6 Independent Variables

The main independent variable is the ESG score from Thomson Reuters Refinitiv ESG data. Thomson Reuters offers standardized ESG scores that evaluate public disclosures from companies, including annual reports, sustainability reports, and other official filings.

3.7 Control Variables

This study contains four controls, which are: Leverage (LEV), Firm Size (FS), and Return on Assets (ROA). These are classified as control variables because they differentiate the ESG effect from established economic factors that can affect the discretionary accruals (DACCit). Previous syntheses of earnings quality and earnings management (EM) shows that model under specification should control for these fundamentals to avoid biased inferences (P. Dechow et al., 2010).

The ESG score can between 0-100. Higher score means stronger ESG performance and further disclosure quality. Using a single-source data provider improves the consistency of the report while minimizing measurement bias in the outcome as compared to building a manual checklist. This also helps to improve cross-firm and year comparability. Thomson Reuters rates companies based on environmental performance, social performance, and governance quality. The company's overall ESG score reflects its performance across these measures. The study captures performance reliability and captures an objective account of ESG performance.

In cases where Thomson Reuter score of a particular firm-year is not available, a second GRI-style ESG disclosure index is used. The

index takes the form of a checklist comprising 78 ESG disclosure items. Each item receives a score of 1 if disclosed and 0 if not disclosed, and the total is rescaled to 0-100 to retain comparability with the main measure.

3.7.1 Leverage (LEV)

Leverage measures the reliance of a firm on creditor financing and holding of debt covenants. In this study, the leverage is measured by the debt-to-asset ratio, (total liabilities divided by total assets) at a specific period end. Companies with more restrictive covenants or that are under pressure for refinancing have greater incentives to increase reported earnings through accrual choices, which are seminal evidence documents with abnormally high accruals around debt-covenant violations (DeFond & Jiambalvo, 1994). Therefore, the addition of LEV helps to separate the ESG effect from debt pressure effects on discretionary accruals.

3.7.2 Firm Size (FS)

Firm Size serves as the proxy for political cost and visibility. Positive Accounting Theory argues that larger firms attract greater regulatory and stakeholder attention, which can influence disclosure and accounting choices (Watts & Zimmerman, 1986). At the same time, larger companies have more complex operations that inherently generate accruals. Consistent with prior studies, FS is the natural logarithm of total assets. We see the expected sign as ambiguous and use FS only to control for scale related effects (Watts & Zimmerman, 1986).

3.7.3 Return on Assets (ROA)

ROA is the proxy of profitability, calculated as net income divided by total assets. Performance and accruals are heavily linked, because when profitability is not in the math, the estimated ESG-EM relationship may be biased

one to another. Accrual based EM studies recommends controlling for performance directly in the main regression, rather than inside the accruals model, to increase both specification and power (Kothari et al., 2005). Furthermore, the baseline EM tests and model evaluations shows the sensitivity and discretionary accrual measures to firm performance (Dechow et al., 1996). Hence, all the relative orientations alignment is retained as a performance control, which is return on assets.

RESULTS AND DISCUSSION

Table 3. Descriptive Statistics Results

Variable Type	Obs	Mean	Std. dev.	Min	Max
year	156	2021.994	1.416478	2020	2024
dacc	156	-.0035298	.0369544	-.13105	.097912
lev	156	.4886234	.179327	.0568415	.909321
size	156	28.04961	1.160372	24.63641	31.08196
roa	156	.0647592	.0590506	-.0939508	.2635962
esgscore	156	68.94014	13.94817	18.37899	92.96033

Source: Processed by the authors (2026)

In this study, DACC is the main dependent variable with an average value of -0.0035 with minimum and maximum values of -0.13105 and 0.097912. The negative DACC mean value indicates that companies sampled are on average income-decreasing accrual manager than income-increasing accrual manager. The Electrical Machinery industry in Japan has a strong corporate governance environment which encourages the companies within the industry to report conservatively. With its standard deviation of 0.0370, earnings management has shown moderate variation. The mean value of the ESG score used as the main independent variable here is 68.940, however, its minimum value was 18.379 and maximum was 92.960. The average ESG score for firms in the TSE electrical machinery sector during the period under review is relatively high. The standard deviation of 13.948 reflects meaningful variation across firms, providing sufficient dispersion to detect the relationship

Descriptive Statistics Analysis

Table 3 shows the result of descriptive statistics. The sample uses a 5 year period observation 2020-2024 has 156 firm-year multiple observations. The dependent variable is earnings management measured with discretionary accruals (DACC). The main independent variable is the ESG score. The control variables are leverage (LEV), firm size (SIZE), and return on assets (ROA).

between ESG performance and earnings management.

Regarding the control variables, leverage (LEV) has an average rate of 0.489 with a minimum of 0.057 and a maximum of 0.909 implying that the sampled firms, on average, finance 48.9% of their total assets with liabilities. Moreover, the extent of reliance on debt varies widely from one firm to the next. The size of the firm (FS) measured through the natural logarithm total assets has a mean score of 28.050, minimum score of 24.636 and maximum score of 31.082. This score signifies that the companies listed in TSE under Electrical Machinery have a relatively large scale. Finally, return on assets (ROA) possessing a mean of 0.065, minimum of -0.094 and maximum of 0.264 indicates that sampled firms have on average profitable returns, although some firms report negative returns during the observation

window. The full descriptive statistics results are presented in Table 3.

Classical Assumption Test

The Pearson correlation test was used as multicollinearity tests for the variables in the

research model to test the relationship of all variables. The set of variables are DACC, ESG score, leverage (LEV), firm size (FS), and return on assets (ROA). The following table indicates the findings of the Pearson correlation test.

Table 4. Pearson Correlation

Variables	dacc	esgscore	lev	size	roa
dacc	1.0000				
esgscore	-0.0139	1.0000			
lev	-0.1476*	0.3982***	1.0000		
size	-0.0740	0.4236***	0.0031	1.0000	
roa	0.1031	-0.3572***	-0.0248	-0.4983***	1.0000
*** Highlights significance level at < 1%.	*** Highlights significance level at < 1%.	*** Highlights significance level at < 1%.	*** Highlights significance level at < 1%.		
** Highlights significance level at < 5%.	** Highlights significance level at < 5%.	** Highlights significance level at < 5%.	** Highlights significance level at < 5%.	** Highlights significance level at < 5%.	
* Highlights significance level at < 10%.	* Highlights significance level at < 10%.	* Highlights significance level at < 10%.	* Highlights significance level at < 10%.	* Highlights significance level at < 10%.	
Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	

The results indicate that multicollinearity test was passed as none of the independent variable pairs correlated more than 0.80. The correlation of the independent variable with the other independent variable was highest between FS and ROA (-0.4983). Nevertheless, this is still less than the critical level. Thus, there is no strong association among all the independent variables, and it is appropriate for further regression analysis. The results of Pearson correlation are shown in Table 4.

Regression Analysis

A variety of model selection tests were employed in order to determine the most suitable model for the research. Initially, a Breusch-Pagan Lagrangian Multiplier test was performed to choose between Pooled OLS and Random

Effects. The probability value (Prob > chi2) for the test is 0.0001, which is lower than 0.05 so null hypothesis is rejected. Therefore, Random Effects model is chosen over Pooled OLS. In the following stage, a Hausman test was performed to evaluate whether Fixed Effects or Random Effects model is preferable. The Hausman test's Chi-square value is 13.01, with a Prob > chi2 of 0.0112 which is lower than 0.05, suggesting a rejection of the null hypothesis. Due to this reason, Fixed Effects model is chosen for this research. Moreover, the Modified Wald test for groupwise heteroscedasticity resulted in a Prob > chi2 of 0.0000 which means the model is heteroscedastic. In the last regression, robust standard errors are used to tackle this. The serial correlation test resulted in a p-value of 0.128,

which is greater than 0.05. Hence, it suggests that the model is free from serial correlation issue. Hence, we employed a regression model which uses the Fixed Effects model with robust

standard error. The results of the regression are below.

Table 5. Final Regression Results (Fixed Effects with Robust Standard Errors)

dacc	Coefficient	Robust std. err.	t	P> t	P> t	[95% conf. interval]	[95% conf. interval]	[95% conf. interval]
esgscore	-.0012083	.000591	-2.04	0.049**	0.049**	-.0024137	-.0024137	-2.84e-06
lev	-.0604774	.0490623	-1.23	0.227	0.227	-.1605406	-.1605406	.0395858
size	.0388544	.0192719	2.02	0.053*	0.053*	-.0004509	-.0004509	.0781597
roa	.2523883	.1985439	1.27	0.213	0.213	-.1525447	-.1525447	.6573213
_cons	-.9968753	.5317204	-1.87	0.070*	0.070*	-2.081326	-2.081326	.0875756
sigma_u	.04813639							
sigma_e	.03074153							
rho	.71030135	(fraction of variance due to u_i)	(fraction of variance due to u_i)	(fraction of variance due to u_i)	(fraction of variance due to u_i)	(fraction of variance due to u_i)	(fraction of variance due to u_i)	(fraction of variance due to u_i)
***	***	***	***	***				
Highlights significance level at < 1%.	Highlights significance level at < 1%.	Highlights significance level at < 1%.	Highlights significance level at < 1%.	Highlights significance level at < 1%.				
**	**	**	**	**	**	**		
Highlights significance level at < 5%.	Highlights significance level at < 5%.	Highlights significance level at < 5%.	Highlights significance level at < 5%.	Highlights significance level at < 5%.	Highlights significance level at < 5%.	Highlights significance level at < 5%.		
* Highlights	* Highlights	* Highlights	* Highlights	* Highlights	* Highlights	* Highlights		
significance level at < 10%.	significance level at < 10%.	significance level at < 10%.	significance level at < 10%.	significance level at < 10%.	significance level at < 10%.	significance level at < 10%.		
Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)	Source: Processed with STATA 17 by the authors (2026)		

According to the regression results, the ESG score has a significant negative effect on DACC (-0.0012083 with a p-value of 0.049 at 5% level), which is the conclusion of the study. This suggests that the firms with higher levels of ESG scores tend to have lower levels of earnings management behavior, consistent with the prediction of stakeholder theory. Better ESG performance increases the level of transparency and raises the reputational cost of opportunistic

reporting by reducing managers' incentives to manipulate earnings. As a result, H1 is accepted.

The control variables include firm size (FS) that shows a positive and weakly significant effect on DACC with a coefficient of 0.0388544 and p-value of 0.053 at 10% confidence level. Larger firms tend to have slightly greater discretionary accruals which could be due to the

complexity of operations in these firms allowing larger opportunities for accruing. In the meantime, the leverage (LEV) variable shows a negative and insignificant effect on DACC since the coefficient of LEV is -0.0604774 and the p-value is 0.227, indicating that the sample does not manage earnings as per debt level. The coefficient value of return on assets (ROA) has a positive influence on DACC for as much as 0.2523883 with a p-value of 0.213. Thus, it can be said that profitability has no significant effect on the earning management on the firms of TSE Electrical Machinery in the observation period. The full regression results are presented in Table 5.

Research Discussion

Based on the regression result above, ESG score has a negative and significant influence towards earnings management as shown in Table 4.1. The ESG score with a coefficient of -0.0012083 was found to have a statistically significant negative impact on discretionary accruals (DACC) since p-value = 0.049 at 5% significance. Firms with better ESG ratings appear to manage their earnings up rather than managing earnings down. This finding aligns with stakeholder theory's prediction (Freeman, 2010). It suggests firms with robust ESG commitment face stronger monitoring pressure. This is because more stakeholders are involved. As such, these firms face pressure to increase the reputational cost of opportunistic reporting. Therefore, it reduces the incentive for management to manipulate earnings. Thus, H1 is accepted.

Previous studies have found similar findings. Sun et al. (2024) examined Chinese listed firms' ESG scores. They found an inverse relationship between ESG scores and earnings management. Furthermore, they argued this effect strengthens firms followed by a greater

number of analysts. This reflects a monitoring role of stakeholders. In a like manner, Cui et al. (2025) showed that mandatory ESG disclosure increases transparency and imposes more discipline on earnings management than in voluntary ESG disclosure regimes. Moreover, Erraja et al. (2024) argued that firms with a greater commitment to ESG face a stronger reputational and monitoring pressure, thus making opportunistic reporting unappealing to managers. As the above-mentioned studies and findings suggest, we can think of the ESG performance as a true monitoring mechanism rather than a mere signaling device, so are the results of the present study.

Previous studies have found similar findings. Sun et al. (2024) examined Chinese listed firms' ESG scores. They found an inverse relationship between ESG scores and earnings management. Furthermore, they argued this effect strengthens firms followed by a greater number of analysts. This reflects a monitoring role of stakeholders. In a like manner, Cui et al. (2025) showed that mandatory ESG disclosure increases transparency and imposes more discipline on earnings management than in voluntary ESG disclosure regimes. Moreover, Erraja and others argued that firms with greater commitment to ESG face a stronger reputation and monitoring pressure, thus making opportunistic reporting unappealing to managers. As the above-mentioned studies and findings suggest, we can think of the ESG performance as a true monitoring mechanism rather than a mere signaling device, so are the results of the present study.

CONCLUSIONS

The objective of this study was to ascertain whether ESG score and financial performance can predict earning management on TSE listed companies in Electrical Machinery

sector on the period of 2020-2024. The current study tests the impact of ESG score as the main independent variable on discretionary accruals which is used as a proxy for earnings management while controlling for leverage, firm size and return on assets. Incorporated into the regression results are the findings regarding the impact of ESG score on earnings management activity. This finding suggests that companies with high ESG score take limited earnings management. The result supports stakeholder theory, which states that firms with stronger environmental, social and governance commitments are exposed to greater scrutiny, broader stakeholder pressure and greater reputational cost, therefore diminishing management's incentive to manipulate reported earnings. Better ESG performance leads to higher quality financial reporting and less hidden corporate actions.

Furthermore, the findings indicate that the size of a firm has a positive and weakly significant effect on discretionary accruals which suggests that larger firms may have more complex operating activities and accounting estimates creating more opportunities for accrual-based earnings management. Furthermore, leverage and return on assets have been found to have no significant influence on earnings management in this study. This indicates that debt pressure and profitability were not the main factors causing the practices of earnings management among the firms observed. To sum up, ESG score is a valid predictor for earnings management in Japanese Electrical Machinery Companies. Furthermore, the proposed hypothesis which states that a greater ESG score evokes a negative response for the level of earnings management was accepted. Also, the findings provide useful insight for investors, auditors and regulators since performance of ESG may be used as a

signal of the reliability of the financial reporting and also help in identifying firms with a lower risk of opportunistic reporting.

Limitations

The current research study has a few limitations or challenges. The limitations of the study pertain to its focus and methodology. First, the study confines the analysis to firms in the TSE Electrical Machinery sector. This means the results may not be generalized to firms in other sectors. Other sectors have different operational characteristics, financial structures, and reporting incentives. And so the results may not be applicable to those firms in other sectors. In addition, the time horizon taken is 5 years from the year 2020 to 2024, which may not suffice the accurate inference of long term developments in ESG practices and behaviour of earnings management. Thirdly, the study employs discretionary accruals as the proxy for earnings management. Consequently, this analysis is nonetheless confined to accrual-based manipulations of earnings. Moreover, it fails to capture real earnings management devices, such as changes in production decisions, cutbacks in discretionary expenses, or source alterations in operations with the aim of affecting reported earnings. Moreover, Thomson Reuters Refinitiv ESG scores are the primary source of ESG performance measures. Despite this source providing that are standardized and consistent in nature, ESG Ratings may contain some methodological shortcomings and do not fully reflect the actual quality of a company's ESG implementation. In conclusion, the present study only employs a few control variables, namely leverage, size (firm size), and return on assets (ROA). However, other control variables, namely audit quality, board characteristics, ownership structure, institutional monitoring, and corporate governance mechanisms, may impact

EM (earnings management), but have not been incorporated in the model.

Suggestions

Based on the research findings and limitations, several recommendations can be made for future research and for practical use. It is suggested that future researchers broaden the sample to include firms from other sectors or other countries so that the relationship can be compared across different institutional and industrial contexts and not just limited to Indian manufacturing firms. Future studies should extend the study period so that more information and facts can be generated over time. Moreover, alternative proxies of earnings management such as real earnings management may be used in future studies to enhance understanding of how managers manipulate accounting earnings. Scholars are counseled to incorporate additional independent or control variables such as board

independence, audit quality, ownership concentration, institutional ownership and firm growth to enhance the model's explanatory power. In practical terms, firms need to strengthen their ESG performance and improve their disclosures, as a stronger ESG commitment not only enhances corporate image and trust from stakeholders but also lowers the chance of earnings manipulation. In assessing the quality and credibility of corporate reporting, a number of investors and auditors may also consider ESG score to evaluate the risk of earning management. The implications for regulators are that stronger and more consistent ESG disclosure standards may ultimately lead to greater transparency and lower earnings management practices, therefore policies that encourage ESG reporting quality and sustainability disclosure assurance should continue to be encouraged, especially developing markets like Indonesia.

REFERENCES:

- Cui, X., Li, R., Xue, S., & Zhang, X. (2025). Mandatory versus voluntary: The real effect of ESG disclosures on corporate earnings management. *Journal of International Money and Finance*, 154(March), 103323. <https://doi.org/10.1016/j.jimonfin.2025.103323>
- Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50(2–3), 344–401. <https://doi.org/10.1016/j.jacceco.2010.09.001>
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and Consequences of Earnings Manipulation : An Analysis of Firms Subject to Enforcement Actions by the SEC *. 13(I), 1–36.
- DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, 17(1–2), 145–176. [https://doi.org/10.1016/0165-4101\(94\)90008-6](https://doi.org/10.1016/0165-4101(94)90008-6)
- Dsouza, A. G., Devji, S., & Prasad, K. (2025). Beat around the bush: earnings management, CSR spending and CSR report readability. *Society and Business Review*, 20(1), 160–175. <https://doi.org/10.1108/SBR-05-2024-0159>
- Erraja, C., Ying, Q., & Khalil, H. (2024). Corporate social responsibility, CEO characteristics, and earnings management: Evidence from China. *Business and Society Review*, 129(2), 313–345. <https://doi.org/10.1111/basr.12355>

- Fernando, K., Nurcholifah, S., & Pulungan, A. H. (2022). Disclosure of environmental, social, and governance on firm performance pre and post introduction of integrated reporting: Evidence from ASEAN countries. *International Journal of Energy Economics and Policy*, 12(6), 377–382. <https://doi.org/10.32479/ijeeep.13561>
- Freeman, R. E. (2010a). *Stakeholder theory : the state of the art* [Book]. Cambridge University Press.
- Freeman, R. E. (2010b). *Stakeholder theory : the state of the art* [Book]. Cambridge University Press.
- Gras-Gil, E., Palacios Manzano, M., & Hernández Fernández, J. (2016). Investigating the relationship between corporate social responsibility and earnings management: Evidence from Spain. *BRQ Business Research Quarterly*, 19(4), 289–299. <https://doi.org/10.1016/j.brq.2016.02.002>
- Jones, J. J. (1991). Earnings Management During Import Relief Investigations [Article]. *Journal of Accounting Research*, 29(2), 193–228. <https://doi.org/10.2307/2491047>
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163–197. <https://doi.org/10.1016/j.jacceco.2004.11.002>
- Mao, Z., Wang, S., & Lin, Y. E. (2024). ESG, ESG rating divergence and earnings management: Evidence from China. *Corporate Social Responsibility and Environmental Management*, 31(4), 3328–3347. <https://doi.org/10.1002/csr.2748>
- Nguyen, H. T. T., Nguyen, T. T., & Nguyen, H. T. T. (2024). The impact of earnings opacity on corporate social responsibility: insights from Vietnamese listed firms. *Journal of Economics and Development*, 26(4), 290–305. <https://doi.org/10.1108/JED-03-2024-0103>
- Petersen, M. A. (2009). Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches [Article]. *The Review of Financial Studies*, 22(1), 435–480. <https://doi.org/10.1093/rfs/hhn053>
- Roychowdhury, S. (2006). Earnings management through real activities manipulation [Article]. *Journal of Accounting & Economics*, 42(3), 335–370. <https://doi.org/10.1016/j.jacceco.2006.01.002>
- Sun, W., Chen, S., Jiao, Y., & Feng, X. (2024). How does ESG constrain corporate earnings management? Evidence from China. *Finance Research Letters*, 61(December 2023), 104983. <https://doi.org/10.1016/j.frl.2024.104983>
- Watts, R. L., & Zimmerman, J. L. (1986). Positive Accounting Theory. In *The Accounting Review* (Vol. 65, Number 1, pp. 131–156). <https://faculty.etsu.edu/POINTER/watts&zimmerman2.pdf>

