

The Effect of Company Size, Leverage, and Audit Quality on Earnings Management: Managerial Ownership as a Moderating Variable

Original Article

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Abstract

Earnings management remains a persistent issue in financial reporting, particularly in capital-intensive sectors such as the mining industry. Various firm characteristics and governance mechanisms are often examined to understand their role in influencing managerial incentives to manipulate earnings. This study investigates the effect of firm size, leverage, and audit quality on earnings management, with managerial ownership included as a moderating variable. This investigation utilizes secondary data extracted from the audited annual reports of mining enterprises listed on the Indonesia Stock Exchange (IDX) across the 2020–2024 observation window. The proposed hypotheses are evaluated through panel data estimation employing a Moderated Regression Analysis (MRA) specification. The empirical results demonstrate that leverage bears a statistically significant inverse relationship with earnings management, implying that greater debt exposure may curtail managerial latitude in financial reporting due to intensified scrutiny from creditors. In contrast, neither firm size nor audit quality exhibits a statistically discernible association with earnings management practices. Moreover, managerial ownership does not condition or moderate the relationships between firm size, leverage, audit quality, and earnings management. These findings underscore the salience of external disciplinary mechanisms, particularly creditor oversight, in constraining opportunistic reporting behavior, whereas managerial ownership appears to possess limited governance potency, largely attributable to its relatively marginal proportion within mining firms. Collectively, the study augments the extant literature by furnishing empirical insight into the effectiveness of governance mechanisms in mitigating earnings manipulation within Indonesia's resource-based industrial sector.

Keywords: Audit Quality, Earnings Management, Firms Size, Managerial Ownership, Leverage.

1. Introduction

The mining sector is a strategic sector in the Indonesian economy because it contributes significantly to exports, state revenue, and the supply of raw materials for industry (Owo, 2024). Indonesia has abundant mineral reserves, with coal, copper, nickel, and gold dominating its mining exports (Badan Geologi & Kementerian Energi dan Sumber Daya Mineral, 2021). However, this condition is influenced by global market dynamics, particularly commodity price fluctuations (Hanitha & Angreni, 2024). In 2020-2021, the COVID-19 pandemic caused a decline in demand for energy and raw materials, leading to a fall in coal and nickel prices (Meyliawati et al., 2022). However, in 2022, Indonesia's mining sector experienced an increase in commodity prices such as coal and nickel due to the global energy crisis, although prices began to decline again in 2023-2024 (PWC, 2023). Such developments



have led to a contraction in revenues for a number of companies, as evidenced by the financial reports disclosed on the official Indonesia Stock Exchange (www.idx.id) website.

Fluctuations in income generate considerable pressure on management to sustain an appearance of performance consistency in the eyes of investors, creditors, and other stakeholders. Such pressures may incentivize the implementation of earnings management practices, potentially undermining the informational reliability of financial statements used for decision-making. Earnings management constitutes an accounting stratagem whereby financial figures are deliberately adjusted to portray the firm's financial position and operational performance in a more auspicious manner through its reported accounts (Tiong & Sumari, 2022; Wardana et al., 2024). In this study, company size, leverage, and audit quality are factors that indicate the existence of earnings management practices (Atmamiki & Priantinah, 2023).

Firm size represents a proxy for the organizational scale of an entity, commonly gauged through metrics such as aggregate assets, revenue magnitude, or market capitalization (Leba et al., 2022). According to research (Atmamiki & Priantinah, 2023; Fadhilah & Kartika, 2022; Romadhaniah & Lahaya, 2021), company size has a positive effect on earnings management. On the other hand, some research (Habibie & Parasetya, 2022; Sari & Susilowati, 2021; Wijayanti, 2023) shows that company size has a negative effect on earnings management.

Beyond firm size, leverage constitutes another salient determinant that may influence the propensity for earnings management (Thyas, 2021). Leverage plays a pivotal role in shaping a firm's capital structure. Higher levels of debt amplify cash flow pressure and increase the probability of defaulting on contractual payment obligations (Mutumanikam & Adelin, 2024). This may encourage managers to engage in opportunistic behavior through earnings management, with the aim of maintaining the trust of creditors and keeping the company's financial position looking healthy (Santoso, 2023). Prior empirical inquiries present incongruous findings regarding the nexus between leverage and earnings management. Several scholars (Felicya & Sutrisno, 2020; Wulan Astriah et al., 2021; Yasa et al., 2020) document a positive association, suggesting that higher debt levels intensify managerial incentives to manipulate earnings. Conversely, other studies (Atmamiki & Priantinah, 2023; Hidayatullah & Arif, 2023; Widagdo et al., 2021) reveal a negative relationship, indicating that greater leverage may instead constrain earnings management through heightened creditor monitoring.

In addition to leverage, another factor that influences earnings management practices is audit quality. According to Jatmika and Nurdin (2023), audit quality refers to the level of confidence in the auditor's ability to identify and report material misstatements in financial statements, so that the audit results can be relied upon by users of those statements. Public accounting firms (KAP) that are part of the Big Four are generally considered to have high quality, professionalism, and independence in the implementation of audit procedures (Tarigan & Saragih, 2020). According to Albert and Widyastuti (2020) and Maulidah and Santoso (2020) audit quality has a positive effect on earnings management. Meanwhile, according to scholars (Atmamiki & Priantinah, 2023; Hadi & Tifani, 2020; Krismiaji & Sumayyah, 2023) audit quality has a negative effect on earnings management.

This study incorporates managerial ownership as a moderating variable in the association between firm size, leverage, audit quality, and earnings management. Managerial ownership represents the share of corporate equity controlled by executives, including directors or commissioners, who hold strategic decision-making power within the firm (Saputri & Mulyati, 2020). Managerial ownership is considered to strengthen or weaken the independent variable because when managers are also shareholders, they act as both

managers and owners, making them more cautious in making decisions related to financial reports as these have a direct impact on the value of their shares (Susanto et al., 2021). According to Wijayanti (2023) and Kusuma and Malau (2023) managerial ownership can moderate company size and leverage, and audit quality. Meanwhile, according to Atmamiki and Priantinah (2023), managerial ownership cannot moderate company size, leverage, and audit quality.

This study falls under the category of developmental research (Wardana et al., 2024) by adding audit quality as an independent variable. In addition, research by (Wardana et al., 2024) states that managerial ownership as an internal factor of the company cannot moderate all of the relationships studied, so that empirical evidence regarding its function as a moderating variable has yet to produce consistent evidence. This study also differs in terms of the time frame used. While previous studies analyzed data from 2019-2021, this study extends the observation period to 2020-2024, thus covering the current conditions after the COVID-19 pandemic that has affected the dynamics of corporate financial reporting. While previous studies analyzed data from 2019-2021, this study extends the observation period to 2020-2024, thereby capturing the post-pandemic period that has influenced the dynamics of corporate financial reporting. This study extends prior work by incorporating audit quality as an additional independent variable and by examining a longer post-pandemic timeframe (2020-2024). This broader period is important because it reflects the structural shifts in financial reporting practices following COVID-19, providing more recent empirical evidence on the determinants of earnings management in the mining sector. By integrating audit quality into the analytical framework and employing a more recent observation period, this study contributes to the literature by providing updated empirical evidence on the determinants of earnings management in the mining sector and re-examining the moderating role of managerial ownership within a post-pandemic financial reporting environment.

2. Literature Review

2.1. Agency Theory

Agency theory delineates the contractual linkage between shareholders as principals and managers as agents entrusted with overseeing the firm's operations. Within this framework, conflicts of interest may emerge because managers can be inclined to advance personal objectives, whereas shareholders are primarily concerned with maximizing firm value (Hendrastuti & Harahap, 2023). Information asymmetry, which is more controlled by agents, leads to opportunistic behavior, such as earnings management practices aimed at making the company's performance appear better to principals (Meckling & Jensen, 1976). Therefore, earnings management is considered a direct impact arising from agency conflicts (Hendrastuti & Harahap, 2023).

The revenue of mining companies is greatly affected by fluctuations in commodity prices on the global market. A downturn in commodity prices often heightens apprehension among creditors and shareholders regarding the firm's capacity to fulfill its obligations and sustain satisfactory financial performance. Under such conditions, management may feel impelled to undertake earnings management practices in order to project financial stability and preserve the confidence of external stakeholders (Rigamonti et al., 2024). Based on agency theory, company size influences the strength of oversight mechanisms. Large companies tend to have more intensive oversight, although their high operational complexity has the potential to increase information asymmetry and open up opportunities for earnings management. Conversely, managerial ownership functions as a moderating mechanism that harmonizes the

interests of managers and shareholders, thereby attenuating managerial incentives to engage in earnings manipulation (Wardana et al., 2024).

2.2. Positive Accounting Theory

According to Watts and Zimmerman (1990) Positive accounting theory is an empirical approach that explains why companies choose certain accounting policies. Unlike normative theory, which focuses on the ideal way to prepare financial statements, positive accounting theory highlights the rational and opportunistic behavior of managers in accounting decisions to maximize their economic interests, including the influence of contracts, incentives, and external pressures (Watts & Zimmerman, 1990). One of the central postulates of positive accounting theory is the debt covenant hypothesis, which posits that firms with elevated leverage encounter stringent pressure from creditors to comply with contractual debt provisions. Such constraints may incentivize managers to undertake earnings management by selectively adopting accounting policies that ensure reported profits remain within stipulated covenant thresholds.

2.3. Signalling Theory

According to signaling theory, companies attempt to convey credible signals to external parties in order to minimize information asymmetry between management and stakeholders (Darmawan, 2020). Audit quality is a crucial external signal because high-quality independent auditors, such as the Big Four, increase confidence in financial statements, thereby limiting opportunities for management to manipulate profits through discretionary accruals or real activities manipulation (Wiratno et al., 2023). Therefore, selecting high-quality auditors can be considered a management strategy to send a positive signal about the company's commitment to transparency, integrity, and good governance to investors and other stakeholders (Judijanto & Iskandar, 2024).

2.4. Hypothesis Development

2.4.1. The Effect of Company Size on Earnings Management

According to Astriah et al. (2021) firm size constitutes a salient benchmark reflecting the magnitude of an enterprise. Larger firms are typically subjected to more rigorous scrutiny from shareholders, investors, creditors, and regulatory authorities, thereby constraining managerial discretion to engage in earnings management practices (Sari & Susilowati, 2021). According to agency theory, the larger the scale of a company, the higher the agency conflict between principals and agents, so principals implement stricter control mechanisms to minimize opportunistic behavior by managers (Meckling & Jensen, 1976). This is in line with the findings (Habibie & Parasetya, 2022; Sari & Susilowati, 2021; Wijayanti, 2023) which state that firm size exhibits an inverse association with earnings management

H1: Company size has a negative effect on earnings management.

2.4.2. The Effect of Leverage on Earnings Management

Leverage measures the proportion of debt in a company's funding structure, reflecting the level of obligation to creditors (Lubis & Nugroho, 2023). The higher the leverage ratio, the more intense the creditor's supervision through debt covenant agreements, which encourages managers to prepare accurate financial statements and reduce the tendency for earnings management. Based on positive accounting theory, managers choose accounting policies in response to incentives and contractual pressures. Hence, increased leverage serves to limit managerial scope for engaging in earnings management behavior. This outcome corroborates the findings advanced by previous academic investigations (Atmamiki & Priantinah, 2023;

Hidayatullah & Arif, 2023; Widagdo et al., 2021) that leverage has a negative effect on earnings management.

H2: Leverage has a negative effect on earnings management.

2.4.3. The Effect of Audit Quality on Earnings Management

Competent auditors possess the expertise to deliver accurate and faithful representations of a firm's actual condition, thereby ensuring that the resulting financial statements are credible and dependable for decision-making purposes (Sari & Susilowati, 2021). Audit quality can be measured by the type of Public Accounting Firm (PAF) that conducts the audit (Sitohang & Susiani, 2023). In signaling theory, the selection of high-quality auditors sends a positive signal to external stakeholders that the company presents its financial statements transparently and credibly. Qualified auditors increase confidence in financial statements while limiting management's opportunistic tendencies. This is in line with the findings (Atmamiki & Priantinah, 2023; Hadi & Tifani, 2020; Krismiaji & Sumayyah, 2023) that audit quality has a negative effect on earnings management.

H3: Audit quality has a negative effect on earnings management.

2.4.4. Managerial Ownership Moderates Firm Size on Earnings Management

Agency theory posits that when managers hold equity stakes in the firm, their sense of accountability intensifies, thereby mitigating potential conflicts of interest between principals and agents. Ownership participation aligns managerial actions with shareholder interests, as strategic decisions directly affect their own wealth. Consequently, opportunistic conduct, including earnings management practices, is likely to be curtailed. According to Wijayanti (2023), managerial ownership can moderate the size of the company in relation to earnings management.

H4: Managerial ownership moderates the size of the company in relation to earnings management.

2.4.5. Managerial Ownership Moderates Leverage on Earnings Management

Wijayanti (2023) contends that managerial ownership moderates the relationship between leverage and earnings management. Leverage is associated with earnings management practices insofar as elevated debt levels intensify creditor monitoring, which, in line with positive accounting theory, may induce managers to adopt more conservative reporting policies. Notwithstanding this relationship, the magnitude and direction of leverage's effect on earnings management are conditioned by the extent of managerial ownership. Within the framework of agency theory, higher managerial equity participation fosters interest alignment between managers and shareholders, attenuating agency conflicts and inducing greater restraint in earnings management practices. This is in line with the findings by Wijayanti (2023) that managerial ownership moderates leverage on earnings management.

H5: Managerial ownership moderates leverage on earnings management

2.4.6. Managerial Ownership Moderates Audit Quality on Earnings Management

Under signaling theory, superior audit quality fosters the preparation of more precise financial statements, as reputable auditors convey favorable signals to external stakeholders regarding the credibility of corporate disclosures. Notwithstanding this relationship, the influence of audit quality on earnings management may be conditioned by the extent of managerial ownership. Within the agency theory framework, greater managerial equity participation promotes a stronger alignment of interests between managers and shareholders, thereby encouraging heightened prudence in financial reporting. Such alignment can amplify the disciplinary role of audit quality in constraining earnings management, as manager–

owners are typically more receptive to auditor scrutiny and more committed to compliance with financial reporting conventions. This outcome is congruent with evidence reported in previous scholarly investigations (Kusuma & Malau, 2023) which states that managerial ownership moderates audit quality with respect to earnings management.

H6: Managerial ownership moderates audit quality on earnings management.

2.4.7. Conceptual Framework

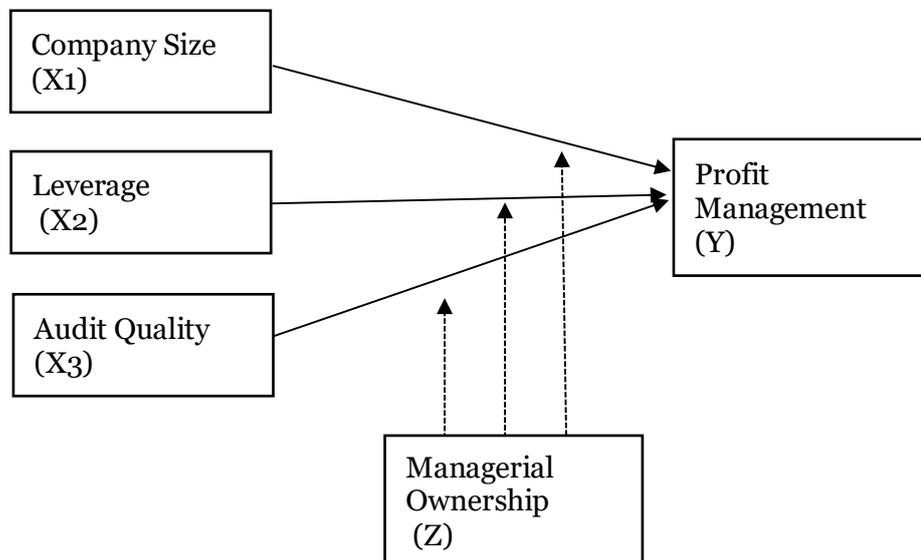


Figure 1. Conceptual Framework

Source: Data processed by the author

The conceptual framework of this study is presented in Figure 1, illustrating the relationship between company size, leverage, and audit quality as independent variables affecting earnings management, with managerial ownership acting as a moderating variable.

3. Methods

This inquiry is structured within a quantitative methodological framework. The empirical dataset is composed of secondary data sourced from the audited annual reports of mining corporations listed on the Indonesia Stock Exchange (IDX), accessed through the official IDX platform (www.idx.co.id) for the 2020-2024 fiscal interval. Sample determination is conducted through purposive sampling, yielding 30 qualifying firms and an aggregate of 150 firm-year observations. The final sample reflects the omission of entities that did not consistently disclose financial statements on the IDX, lacked continuous managerial shareholdings over the observation horizon, or exhibited incomplete datasets.

Within the analytical model, earnings management is defined as the endogenous variable, while firm size, leverage, and audit quality function as exogenous explanatory variables, and managerial ownership is employed as a moderating factor. The ensuing section delineates the operationalization of variables and the procedural stages of analysis.

Table 1. Operational Definitions and Measurement of Variables

Variables	Operational Definition of Variables	Variable Measurement
Profit Management (Y)	Refers to managerial actions in financial reporting that intentionally influence reported earnings to achieve certain objectives, often through the use of accounting discretion (Wowor et al., 2021).	Discretionary accrual (DA) c by using Modified Jones Model $DA_{it} = \frac{TAC_{it}}{A_{it}} - NDA_{it}$ (Habibie & Parasetya, 2022)
Company Size (X1)	Company size indicates the size of the company, which is calculated using the natural logarithm of total assets at the end of the period (Romadhaniah & Lahaya, 2021).	$Firms\ Size = \ln(\text{Total Aset})$ (Wulan Astriah et al., 2021)
Leverage (X2)	Leverage is a ratio that describes the proportion of debt to equity in a company's capital structure (Kusumadewi, 2022).	$DAR = \frac{Total\ Liabilitas}{Total\ Ekuitas} \times 100\%$ (Kusumadewi, 2022)
Audit Quality (X3)	Audit quality refers to how well auditors and audit teams perform their examination duties professionally (Yartono & Utami, 2022).	Audit quality measurement using dummy variables, where 1 represents Big Four accounting firms and 0 represents non-Big Four accounting firms (Yartono & Utami, 2022)
Managerial Ownership (Z)	Managerial ownership is the portion or percentage of company shares controlled by management, including directors and/or commissioners, who play an active role in managing and making decisions within the company (Maulana & Widyawati, 2020).	$KM = \frac{Saham\ Manajerial}{Saham\ Beredar} \times 100\%$ (Wardana et al., 2024)

Panel data regression analysis techniques were used in this study. The panel data approach in this study was used by combining data from several years and various companies. This study uses time series data covering the period 2020-2024. In addition, the data is also cross-sectional because it comes from various companies. Thus, this study utilizes a combination of both types of data to obtain a more comprehensive analysis. The collected data was then analyzed using STATA, which was selected due to its robustness and reliability in handling panel data analysis, including its capability to estimate fixed effects and random effects models and to perform various diagnostic and specification tests:

$$Y = \alpha + \beta_1 Size + \beta_2 Lev + \beta_3 KA + \beta_4 KM + \beta_5 Size * KM + \beta_6 Lev * KM + \beta_7 KA * KM + e$$

Description:

Y = Earnings Management

α = Constant

$\beta_{(1-7)}$ = Regression coefficient

Size = Company size

Lev = Leverage

KA = Audit quality

KM = Managerial Ownership

E = error term, which is the level of user error in the study

4. Results and Discussion

4.1. Research Results

4.1.1. Descriptive Statistical Test

Table 2. Descriptive Statistical Test Results

Variable	N	Minimum	Maximum	Mean	Std. deviation
ML	150	-0.34	0.26	-0.05	0.09
Size	150	25.10	32.76	29.18	2.01
Lev	150	0.00	11.78	1.50	2.11
KM	150	0.00	0.87	0.15	0.25

Source: STATA Output, 2025

Referring to Table 2, the average value of earnings management is -0.05 with a standard deviation of 0.09 , suggesting that, on aggregate, sampled firms exhibit a propensity to downscale reported earnings through discretionary accounting choices, notwithstanding the presence of both income-increasing and income-decreasing practices across observations.

Firm size averages 29.18 with a standard deviation of 2.01 , reflecting a relatively narrow range of firm scales within the sample. Leverage, with a mean of 1.50 and a standard deviation of 2.11 , indicates pronounced variability in firms' reliance on debt financing. In contrast, managerial ownership registers a mean of 0.15 and a standard deviation of 0.25 , suggesting that while managerial equity stakes are generally low, certain firms exhibit markedly higher ownership concentrations.

Table 3. Frequency Distribution Test Results

Audit Quality	Frequency	Percent	Cumulative Percent
0	97	64.67	64.67
1	53	35.33	100.00
Total	150	100.00	

Source: STATA Output, 2025

Based on the results of the frequency distribution analysis of the audit quality variable in the Table 3, a total of 150 observations were obtained. Of these, 97 observations, or approximately 64.67% of the total sample, were companies that did not use the audit services of non-Big Four public accounting firms. Meanwhile, companies audited by Big Four KAPs accounted for 53 observations or 35.33%. This shows that most companies in the sample did not use the audit services of Big Four KAPs; the majority of companies still chose auditors other than Big Four for their audit services.

4.1.2. Panel Model Selection Test

A. Chow Test

Table 4. Chow Test Results

Test	Statistic	Value	p-value	Description
Chow Test	F	1.12	0.33	Fe rejected, proceed to LM test

Source: STATA output, 2025

The Chow test displayed in the Table 4 yields a statistical value of 1.12 with a p-value of 0.33 . Since the p-value surpasses the 0.05 significance threshold, the fixed effects (FE) model is not supported. This outcome implies that the fixed effects specification is unsuitable for the

dataset under examination. Consequently, the analysis proceeds with the Lagrange Multiplier (LM) test to determine the more appropriate model between the random effects (RE) estimator and the pooled ordinary least squares (OLS) approach.

B. LM Breusch-Pagan Test

Table 5. LM Test Results

Test	Statistics	Value	p-value	Description
LM Test	Chibar2	0.89	0.17	Rejected, use OLS

Source: STATA output, 2025

According to the LM test results presented in Table 5, the chi-square statistic was 0.89 with an associated p-value of 0.17. Since the p-value exceeds the 0.05 significance threshold, the random effects (RE) model is not supported. This suggests that the RE model does not offer an improvement over the Ordinary Least Squares (OLS) approach. Consequently, the OLS model is identified as the most suitable method for analyzing the data.

4.1.3. Multicollinearity Test

Table 6. Multicollinearity Test Results

Variables	Vif	Description
Size	2.06	No Multicollinearity
Lev	1.50	No Multicollinearity
KA	2.11	No Multicollinearity
KM	1.56	No Multicollinearity
Size_Km	2.14	No Multicollinearity
Lev_KM	1.60	No Multicollinearity
KA_KM	2.33	No Multicollinearity
Mean Vif	1.90	No Multicollinearity

Source: STATA output, 2025

The multicollinearity test results, presented in Table 6, indicate that all variables in the model have VIF values below 10. This suggests the absence of multicollinearity, confirming that the model is appropriate for further analysis.

4.1.4. Heteroscedasticity Test and Autocorrelation Test

Table 7. Results of Heteroscedasticity Test and Autocorrelation Test

Model	Test Results	Statistical Values	Prob.	Description
Model 1	Heteroscedasticity (Chi2)	2.16	0.14	No Heteroscedasticity
Model 2	Autocorrelation	2.30	0.03	No Autocorrelation

Source: STATA output, 2025

The heteroscedasticity test results in Table 7 show a Chi-Square statistic of 2.16 with a p-value of 0.14, which exceeds the 0.05 significance threshold, indicating that heteroscedasticity is not present. In contrast, the autocorrelation test yields a statistic of 2.30 with a p-value of 0.03. Based on the established decision criterion, the model is determined to be free from autocorrelation.

4.1.5. Hypothesis Testing

Table 8. Hypothesis Test Results

Variables	Coefficient	T Statistic	P>[t]	Description
Size	-0.00	-0.73	0.46	No effect
Lev	-0.01	-2.50	0.01	Negative effect
Ka	-0.00	-0.08	0.93	No effect
Size_Km	0.03	1.24	0.21	No effect
Lev_Km	0.01	1.21	0.22	No effect
Ka_Km	-0.01	-0.12	0.90	No effect

Source: STATA output, 2025

Referring to Table 8, the empirical estimation employing the Ordinary Least Squares (OLS) technique augmented with Moderated Regression Analysis (MRA) indicates that leverage is the sole variable exhibiting a negative influence on earnings management. The remaining variables are found to exert no statistically discernible effect on earnings management.

4.2. Discussion

4.2.1. The Effect of Company Size on Earnings Management

Table 8 shows that firm size does not significantly impact earnings management, implying that the magnitude of a firm does not systematically drive earnings manipulation. With a significance level of 0.46, well above the 0.05 threshold, the hypothesized effect is not supported. Descriptive analysis reveals a mean firm size of 29.18 and a standard deviation of 2.01, indicating that firm sizes within the sample exhibit relatively limited variation. These findings diverge from prior empirical evidence (Habibie & Parasetya, 2022; Sari & Susilowati, 2021; Wijayanti, 2023), which documents a negative association between firm size and earnings management.

However, this is consistent with the findings by Rohmah and Meirini (2022) and Oktaviana and Rivandi (2023) which state that company size has no effect on earnings management. According to agency theory, large companies do have the potential to face more intense agency conflicts, but strict supervision by shareholders, auditors, and regulators can limit managers' opportunistic actions. Conversely, smaller firms may lack the incentives or flexibility to manipulate earnings extensively.

From a practical perspective, this finding suggests that organizational scale alone is insufficient as a governance indicator for detecting earnings manipulation, particularly in the mining sector. Investors and regulators in resource-dependent economies should therefore focus more on governance structures and monitoring mechanisms rather than relying solely on firm size as a proxy for financial reporting quality.

4.2.2. The Effect of Leverage on Earnings Management

The findings demonstrate that leverage has a negative and statistically significant impact on earnings management, with a significance level of 0.00, well below the 0.05 threshold, supporting the proposed hypothesis. Consistent with positive accounting theory, particularly the debt covenant hypothesis, firms with higher leverage face intensified monitoring by creditors through debt covenants. This heightened oversight constrains managerial discretion, thereby reducing the propensity to engage in earnings manipulation. This is in line with the findings (Atmamiki & Priantinah, 2023; Hidayatullah & Arif, 2023; Widagdo et al., 2021) which state that leverage has a negative effect on earnings management.

Based on descriptive statistics, the mean value is 1.50 with a standard deviation of 2.11, indicating a fairly wide difference in the use of debt between companies. High-leverage companies are usually more conservative in their financial reporting to maintain creditor confidence and prevent covenant violations. Therefore, this study reinforces positive accounting theory that debt-based capital structure is effective as a control over management opportunism, especially earnings management.

In practical terms, the findings highlight that debt can function as an effective external governance mechanism. In capital-intensive industries such as mining, where companies depend heavily on external financing, creditor oversight can play a critical role in improving financial reporting discipline. This suggests that creditor monitoring may enhance investor confidence by limiting managerial opportunism in volatile sectors characterized by high capital requirements and market uncertainty.

4.2.3. The Effect of Audit Quality on Earnings Management

Referring to Table 8, audit quality is found to have no statistically significant effect on earnings management, as indicated by a significance value of 0.93, which exceeds the 0.05 criterion; hence, the hypothesis is rejected. The frequency distribution further reveals that 97 observations (approximately 64.67% of the total sample) pertain to firms audited by non-Big Four public accounting firms, whereas 53 observations (35.33%) involve audits conducted by Big Four firms.

These findings contradict prior studies (Atmamiki & Priantinah, 2023; Hadi & Tifani, 2020; Krismiaji & Sumayyah, 2023) that document a negative association between audit quality and earnings management. Nevertheless, the results are consistent with the evidence reported by scholars (Ayuputri et al., 2023; Ihsan & Haryono, 2021; Setiawati et al., 2021).

From a signaling theory perspective, audit quality is expected to enhance the credibility of financial statements for external stakeholders. However, in this study, audit firm classification does not appear to produce a sufficiently strong signal to differentiate financial reporting behavior among mining companies. One possible explanation lies in the strict regulatory environment and industry-specific reporting standards within the mining sector, which may reduce variations in financial reporting practices regardless of the type of audit firm engaged.

In practice, this finding suggests that investors should not rely solely on the Big Four-non-Big Four distinction as an indicator of financial reporting reliability, particularly in industries where regulatory oversight and reporting requirements are already stringent.

4.2.4. Managerial Ownership Moderates Firm Size on Earnings Management

Table 8 indicates that managerial ownership does not significantly moderate the relationship between firm size and earnings management, with a significance level of 0.21, exceeding the 0.05 threshold. This suggests that variations in managerial equity stakes do not meaningfully influence how firm size relates to earnings manipulation. Accordingly, the proposed hypothesis is rejected. This outcome diverges from the findings of Wijayanti (2023), who reports a moderating effect of managerial ownership on the firm size, earnings management nexus. However, it corroborates the results of Atmamiki and Priantinah (2023), who likewise conclude that managerial ownership fails to moderate the influence of firm size on earnings management.

From the standpoint of agency theory, managerial ownership is theorized to foster alignment between managerial and shareholder interests, thereby mitigating agency conflicts. However, in this study, the average level of managerial ownership was relatively low, so that the economic incentives obtained by managers as shareholders were not strong enough to

materially influence financial reporting decisions. From a practical standpoint, this result indicates that managerial shareholding alone may not be sufficient to strengthen internal governance, particularly when ownership stakes held by managers are minimal. For companies in the mining industry, improving governance may require broader mechanisms such as stronger board oversight or institutional ownership rather than relying primarily on managerial shareholding.

4.2.5. Managerial Ownership Moderates Leverage on Earnings Management

As delineated in Table 8, the interaction term between managerial ownership and leverage fails to attain statistical significance, with a p-value of 0.227 exceeding the 0.05 benchmark. This result indicates that managerial ownership does not significantly moderate the relationship between leverage and earnings management, leading to the rejection of the hypothesized moderating effect. Such a result stands in contradistinction to Wijayanti (2023), who documents a significant moderating effect in this association.

However, this is consistent with findings by Atmamiki and Priantinah (2023) that managerial ownership cannot moderate leverage on earnings management. In positive accounting theory, high leverage already provides sufficient discipline for management through creditor oversight, so that additional share ownership by managers does not produce a moderating effect. Thus, contractual pressure from debt is more dominant in influencing management behavior than managerial share ownership incentives. In practical terms, the findings imply that external governance mechanisms, particularly creditor monitoring, play a more dominant role than internal ownership structures in controlling earnings management within highly leveraged industries.

4.2.6. Managerial Ownership Moderates Audit Quality on Earnings Management

As reported in Table 8, the interaction between managerial ownership and audit quality does not achieve statistical significance, evidenced by a p-value of 0.906, which substantially exceeds the 0.05 criterion. This finding suggests that managerial ownership does not significantly moderate the relationship between audit quality and earnings management, resulting in the rejection of the hypothesized moderating effect. The finding diverges from the results of Kusuma and Malau (2023), who document a significant moderating effect in this linkage. However, this is in line with the findings by Atmamiki and Priantinah (2023) that managerial ownership cannot moderate audit quality with respect to earnings management.

According to agency theory, managerial ownership should be able to synchronize the interests of managers with those of shareholders, thereby reducing opportunistic behavior. However, when the proportion of managerial ownership is still low, this alignment mechanism is less than optimal, so that audit quality as an external control is not strongly supported by managerial ownership. In signaling theory, audit quality serves as an indicator of the credibility of financial reports for investors. However, managerial ownership does not consistently reinforce this signaling effect, as managers who hold equity stakes may still be motivated to influence reported performance through earnings management. Consequently, managerial ownership does not fully operate as an internal mechanism that amplifies the role of audit quality in constraining earnings manipulation. In practice, this indicates that managerial ownership has yet to function effectively as an internal governance mechanism capable of strengthening the monitoring role of external auditors, particularly in industries characterized by complex financial structures and significant capital dependence.

5. Conclusion

The empirical evidence reveals that higher leverage is associated with a reduced propensity for earnings management, implying that higher leverage ratios are associated with a diminished propensity for managerial earnings manipulation, plausibly attributable to intensified creditor oversight. In contrast, firm size does not exhibit a statistically significant effect, suggesting that organizational scale is not a decisive determinant of earnings management practices. Similarly, audit quality is shown to be statistically insignificant, suggesting that the distinction between Big Four and non-Big Four accounting firms does not substantially influence earnings reporting behavior among the sampled companies. In addition, managerial ownership does not moderate the relationships between firm size, leverage, or audit quality and earnings management, implying that these factors affect earnings manipulation through independent structural channels.

This study has several limitations, notably the exclusion of firms that did not consistently publish financial statements, the lack of continuous managerial ownership data throughout the observation period, and incomplete datasets for some companies. Therefore, future studies are recommended to use different companies or sectors with better data availability and a more even distribution of managerial ownership.

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