

Institutional Ownership, Audit Quality, and Firm Size in Relation to Tax Avoidance in Indonesian Mining Firms

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Article History

Received : 26 August 2026
Revised : 28 August 2026
Accepted : 21 September 2026
Published : 22 September 2026

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Cite This Article:

Almeidina, D., & Khotimah, H. (2026). Institutional Ownership, Audit Quality, and Firm Size in Relation to Tax Avoidance in Indonesian Mining Firms. *Jurnal Ilmiah Multidisiplin*, 5(05), 95–102.

DOI:

<https://doi.org/10.56127/jukim.v5i05.3054>

Abstract: Tax avoidance remains a concern in Indonesia's mining sector due to complex business operations and corporate tax planning practices. Inconsistent findings regarding corporate governance mechanisms and firm characteristics highlight the need for further investigation.

Objective: This study aimed to examine the effects of institutional ownership, audit quality, and firm size on tax avoidance among mining companies listed on the Indonesia Stock Exchange during 2021–2025.

Method: A quantitative associative design was employed using purposive sampling, yielding eight companies and 40 firm-year observations. Secondary data from annual financial reports were analyzed using fixed-effects panel regression in EViews 13, with Cash Effective Tax Rate (CETR) as the dependent variable. **Findings:** Institutional ownership ($\beta = 0.462103$; $p = 0.5840$) and audit quality ($\beta = 0.057743$; $p = 0.1477$) were not statistically significant, whereas firm size exhibited a significant negative association with CETR ($\beta = -1.385202$; $p = 0.0004$). The model yielded an adjusted R^2 of 0.416832.

Implications: Firm size warrants consideration when evaluating corporate tax payment patterns, while ownership and audit characteristics require further examination. **Originality:** This study jointly evaluates three corporate characteristics using firm-level fixed effects in Indonesian mining companies during 2021–2025.

Keywords: Audit Quality; Cash Effective Tax Rate; Firm Size; Institutional Ownership; Tax Avoidance.

INTRODUCTION

Tax revenue plays a fundamental role in financing public infrastructure, providing essential services, and supporting sustainable economic development. Nevertheless, the interests of governments and corporations may diverge because taxation represents public revenue for the government but constitutes a financial obligation that reduces corporate cash flows. This tension encourages companies to undertake tax planning activities, including tax avoidance, which generally refers to arrangements intended to reduce tax liabilities within the boundaries of applicable regulations (Hanlon & Heitzman, 2010; Dyreng et al., 2008). Although tax avoidance is conceptually distinct from illegal tax evasion, aggressive tax arrangements may raise concerns regarding corporate accountability, transparency, and the sustainability of government revenue (Desai & Dharmapala, 2006; Slemrod, 2004). These concerns are particularly relevant to Indonesia's mining industry, which involves substantial capital investment, complex operating structures, and significant economic resources. The relationship between corporate governance and tax avoidance in this sector therefore deserves continued examination, particularly as firms balance financial efficiency with regulatory compliance and stakeholder expectations (Sulistiyanti & Saputra, 2020; Prasetyo et al., 2021).

Previous studies have identified corporate governance mechanisms and firm characteristics as potential determinants of tax avoidance, although their empirical findings remain inconsistent. Agency theory suggests that differences between managerial and shareholder interests can create incentives for opportunistic

corporate decisions, while institutional investors may provide monitoring mechanisms that influence management behavior (Jensen & Meckling, 1976; Shleifer & Vishny, 1997). However, institutional ownership does not necessarily constrain tax avoidance because sophisticated shareholders may also favor strategies that increase after-tax returns (Khan et al., 2017). In the Indonesian context, Sulistiyanti and Saputra (2020) found that audit quality was associated with tax avoidance in mining companies, whereas institutional ownership did not demonstrate a significant effect. Prasetyo et al. (2021) also documented the relevance of audit quality and institutional ownership in the relationship between corporate governance and tax avoidance in the mining industry. Meanwhile, Chintia and Susanto (2022) reported that firm size and audit quality influenced tax avoidance, while institutional ownership did not. Srimindarti et al. (2022) similarly identified firm size as an influential factor but found no significant effect of institutional ownership. Other Indonesian studies have continued to report differences in the effects of institutional ownership and audit quality across industries and observation periods (Nurhidayah et al., 2021; Pradita & Pradita, 2023; Tirana & Sisdyani, 2024).

Despite the growing literature, several research gaps remain. First, the inconsistent findings regarding institutional ownership suggest that the effectiveness of shareholder monitoring may depend on corporate characteristics, industry conditions, and the incentives of institutional investors. Second, audit quality is frequently represented by a single indicator, such as the reputation or size of the external audit firm, although audit tenure and auditor rotation may also reflect relevant aspects of the external auditing relationship. Third, the relationship between firm size and tax avoidance remains theoretically ambiguous: larger firms may possess greater resources for sophisticated tax planning, but they may also face stronger public scrutiny and reputational pressure (Rego, 2003; Zimmerman, 1983). Furthermore, prior studies differ in their research periods, sectoral coverage, and tax avoidance measurements, limiting direct comparisons across findings. Accordingly, the contribution of the present study is to examine institutional ownership, audit quality, and firm size within a single panel-data framework focusing specifically on Indonesian mining companies during 2021–2025. Audit quality is operationalized using a composite measure incorporating audit tenure, auditor rotation, and public accounting firm size, while tax avoidance is assessed using the Cash Effective Tax Rate (CETR). This approach provides additional sector-specific evidence, although the composite audit-quality measure requires careful justification because its components represent different auditing characteristics.

This study aims to examine the effects of institutional ownership, audit quality, and firm size on tax avoidance among mining companies listed on the Indonesia Stock Exchange during 2021–2025. Specifically, it investigates whether institutional ownership is associated with corporate tax avoidance, whether audit quality contributes to differences in corporate tax outcomes, and whether firm size influences the extent of tax avoidance. The study also evaluates the explanatory performance of a panel regression model incorporating these variables. Using secondary data from annual reports and financial statements, the analysis covers eight companies and 40 firm-year observations selected through purposive sampling. Institutional ownership is measured by the proportion of institutionally held shares, audit quality by the specified composite indicator, and firm size by the natural logarithm of total assets. CETR is used as an inverse indicator of tax avoidance, meaning that lower cash tax payments relative to pretax income may indicate greater tax avoidance, subject to the limitations of this proxy. The findings are expected to contribute to empirical research on corporate governance and taxation and to provide relevant insights for corporate management, institutional investors, auditors, and policymakers concerned with responsible tax practices in Indonesia's mining industry.

RESEARCH METHOD

This quantitative associative study used secondary data from annual reports and financial statements of mining firms listed on the Indonesia Stock Exchange during 2021–2025. Data were obtained from the Exchange and company websites.

The population comprised mining firms listed on the Indonesia Stock Exchange. Purposive sampling required firms to remain listed throughout 2021–2025, publish consecutive annual financial statements, report complete data for all study variables, and record no pretax losses during the observation period. Eight firms met the criteria, yielding 40 firm-year observations.

The dependent variable was tax avoidance, proxied by the cash effective tax rate (CETR), calculated as tax payments divided by pretax income. Institutional ownership (KI) was the proportion of shares held by institutions. Audit quality (AQ) was described as a composite of audit tenure (AT), auditor rotation (RA),

and audit-firm size (UKAP); auditor rotation was coded 1 for a change of audit firm and 0 otherwise, and Big Four audit-firm status was coded 1 versus 0 for non-Big Four firms. The source does not specify the coding of audit tenure, although it reports AQ values up to 6; the composite therefore cannot be independently reconstructed from the stated rules. Firm size was measured as the natural logarithm of total assets and is labeled LN in the reported output.

The principal variables were calculated as follows:

CETR = Tax payments / Pretax income

KI = Shares held by institutions / Total shares outstanding

AQ = AT + RA + UKAP

LN = ln (Total assets)

Panel data were analyzed in EViews 13. The analysis included descriptive statistics and estimation of the common-effects model (CEM), fixed-effects model (FEM), and random-effects model (REM). The Chow test compared CEM with FEM, and the Hausman test compared FEM with REM. The reported diagnostic procedures included Jarque–Bera normality, multicollinearity, and cross-section dependence tests.

The panel regression equation was specified as follows:

$$CETR = \alpha + \beta_1 KI + \beta_2 AQ + \beta_3 LN + e$$

Where:

CETR = tax avoidance proxied by the cash effective tax rate;

KI = institutional ownership;

AQ = audit quality;

LN = firm size (natural logarithm of total assets);

α = constant;

β_1 – β_3 = regression coefficients;

e = error term.

Partial coefficient tests (t tests) were used to assess individual associations, and the reported overall F-statistic and coefficient of determination (R^2) were used to describe model results. Because the selected model includes firm fixed effects, the overall F-statistic and adjusted R^2 must be interpreted as statistics for the full fixed-effects specification.

RESULTS AND DISCUSSION

Study Setting and Sample

The study examined mining firms listed on the Indonesia Stock Exchange from 2021 to 2025. Annual financial statements and annual reports were used to measure institutional ownership, audit quality, firm size, and tax avoidance.

The source reports a population of 201 firms and 1,005 firm-year observations. Applying the purposive-sampling criteria yielded eight firms observed over five years, for a final sample of 40 firm-year observations. Data were processed in EViews 13.

Descriptive Statistics

Table 1. Descriptive Statistics

Date: 06/08/26 Time: 20:50 Sample: 2021 2025				
	CETR	KI	AQ	LN
Mean	0.291356	0.824569	2.900000	28.43015
Median	0.222357	0.848188	3.000000	28.26059
Maximum	1.037720	0.923159	6.000000	29.95134
Minimum	0.001860	0.640455	1.000000	26.79002
Std. Dev.	0.232248	0.087571	1.296939	0.997730
Skewness	1.390893	-0.947788	0.544227	0.050504
Kurtosis	4.599820	2.881625	2.419951	1.832264
Jarque-Bera	17.16292	6.012032	2.535318	2.289682
Probability	0.000188	0.049488	0.281490	0.318275
Sum	11.65425	32.98275	116.0000	1137.206
Sum Sq. Dev.	2.103625	0.299079	65.60000	38.82316
Observations	40	40	40	40

The descriptive statistics cover 40 observations. CETR ranged from 0.001860 to 1.037720, with a mean of 0.291356 and a standard deviation of 0.232248. Institutional ownership (KI) ranged from 0.640455 to 0.923159, with a mean of 0.824569 and a standard deviation of 0.087571. Audit quality (AQ) ranged from 1.000000 to 6.000000, with a mean of 2.900000 and a standard deviation of 1.296939. Firm size (LN) ranged from 26.79002 to 29.95134, with a mean of 28.43015 and a standard deviation of 0.997730. The reported AQ maximum reinforces the need to clarify the audit-tenure coding and composite-score construction.

Panel-Model Selection

Table 2. Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.762462	(7,29)	0.0051
Cross-section Chi-square	25.846009	7	0.0005

The Chow test produced a cross-section F probability of 0.0051 and a cross-section chi-square probability of 0.0005. Both are below the 0.05 significance level, supporting FEM over CEM.

Table 3. Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	17.051539	3	0.0007

The Chow test favored FEM over CEM ($p = 0.0051$). The Hausman test reported a chi-square statistic of 17.051539 ($p = 0.0007$), supporting FEM over REM. FEM was therefore selected for the panel regression.

Diagnostic Tests

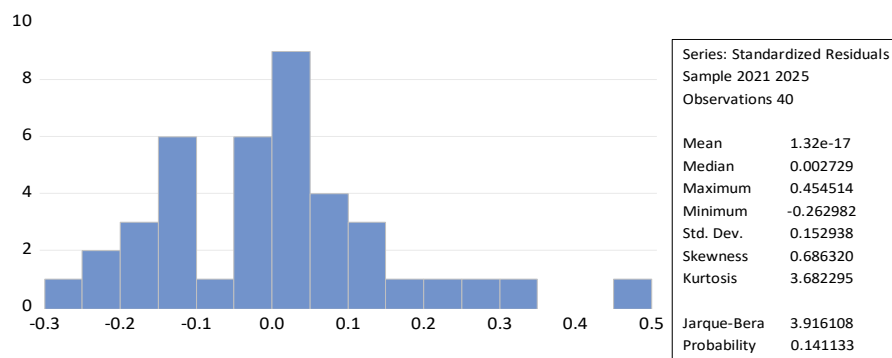


Figure 1. Normality Test

Residual normality was assessed using the Jarque–Bera test in EViews. The statistic was 3.916108, with a probability of 0.141133. Because this probability exceeds 0.05, the test did not reject the null of normally distributed residuals.

Table 4. Multicollinearity Test

	KI	AQ	LN
KI	1.000000	0.040837	-0.378535
AQ	0.040837	1.000000	0.097302
LN	-0.378535	0.097302	1.000000

The reported correlations among independent variables were 0.040837 for KI and AQ, -0.378535 for KI and LN, and 0.097302 for AQ and LN. Each absolute correlation was below 0.80. This pairwise check does not, by itself, establish the absence of all forms of multicollinearity.

Table 5. Cross-Section Dependence Test

Residual Cross-Section Dependence Test
 Null hypothesis: No cross-section dependence (correlation) in residuals
 Equation: Untitled
 Periods included: 5
 Cross-sections included: 8
 Total panel observations: 40
 Cross-section effects were removed during estimation

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	29.33132	28	0.3959
Pesaran scaled LM	0.177905		0.8588
Bias-corrected scaled LM	-0.822095		0.4110
Pesaran CD	0.887481		0.3748

The Pesaran CD test had a probability of 0.3748, above 0.05; the test therefore did not detect cross-section dependence.

Panel Regression Results

Table 6. Panel Regression Results

Cross-section random effects test equation:
 Dependent Variable: CETR
 Method: Panel Least Squares
 Date: 06/08/26 Time: 22:06
 Sample: 2021 2025
 Periods included: 5
 Cross-sections included: 8
 Total panel (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	39.12439	9.880621	3.959709	0.0004
KI	0.462103	0.834569	0.553702	0.5840
AQ	0.057743	0.038824	1.487280	0.1477
LN	-1.385202	0.349803	-3.959948	0.0004
Effects Specification				

The estimated regression equation was:

$$CETR = 39.12439 + 0.462103KI + 0.057743AQ - 1.385202LN + e$$

The institutional-ownership coefficient was 0.462103 and the audit-quality coefficient was 0.057743; both were positive in relation to CETR. The firm-size coefficient was -1.385202, indicating a negative association with CETR. Because CETR is the tax-avoidance proxy, a lower CETR is commonly interpreted as greater tax avoidance; these coefficients describe associations with CETR and should not be read as direct causal effects.

In the FEM partial tests, institutional ownership was not statistically significant ($t = 0.553702$, $p = 0.5840$), and audit quality was not statistically significant ($t = 1.487280$, $p = 0.1477$). Firm size was statistically associated with CETR ($t = -3.959948$, $p = 0.0004$). Thus, among the three reported slopes, only firm size had a statistically significant coefficient at the 0.05 level.

Table 7. Adjusted R-Squared and Overall F-Statistic

Cross-section fixed (dummy variables)

R-squared	0.566362	Mean dependent var	0.291356
Adjusted R-squared	0.416832	S.D. dependent var	0.232248
S.E. of regression	0.177357	Akaike info criterion	-0.392886
Sum squared resid	0.912211	Schwarz criterion	0.071556
Log likelihood	18.85773	Hannan-Quinn criter.	-0.224959
F-statistic	3.787610	Durbin-Watson stat	2.629833
Prob(F-statistic)	0.002386		

The FEM adjusted R-squared was 0.416832. This statistic applies to the full fixed-effects specification, which includes firm-specific effects; it should not be attributed solely to the three explanatory variables.

The reported overall FEM F-statistic was 3.787610 ($p = 0.002386$). This is a significant overall model statistic, but the source output does not establish that it is a joint test of only the three slope coefficients; therefore, it does not support the narrower claim that institutional ownership, audit quality, and firm size are jointly significant.

Discussion

Institutional Ownership and Tax Avoidance

Institutional ownership had a positive coefficient in the CETR equation (0.462103), but its partial test was not statistically significant ($t = 0.553702$, $p = 0.5840$). The data therefore do not provide evidence of a statistically significant association between institutional ownership and CETR in this sample.

This result is consistent with prior Indonesian studies reporting no statistically significant association between institutional ownership and tax avoidance in their respective samples (Nurhidayah et al., 2021; Sulistiyanti & Saputra, 2020). Institutional monitoring may focus on overall performance and returns, while tax-planning decisions remain part of management's operating choices. These interpretations require caution because the present study contains only 40 firm-year observations.

The result should not be interpreted as proof that institutional ownership has no effect in all mining firms or periods. It indicates that this sample did not identify a statistically significant partial association at the 0.05 level.

Audit Quality and Tax Avoidance

Audit quality had a positive coefficient in the CETR equation (0.057743), but its partial test was not statistically significant ($t = 1.487280$, $p = 0.1477$). The data do not provide evidence of a statistically significant association between the reported AQ score and CETR in this sample.

The result is broadly consistent with studies reporting no significant audit-quality association, while other recent findings differ (Cahyani & Hermanto, 2025; Nurhidayah et al., 2021; Sulistiyanti & Saputra, 2020). Comparisons are limited by differences in samples and measures. Interpretation of the current AQ result is further constrained because the audit-tenure coding and construction of the reported composite score are not fully specified.

Firm Size and Tax Avoidance

Firm size had a negative coefficient in the CETR equation (-1.385202) and a statistically significant partial test ($t = -3.959948$, $p = 0.0004$). The result indicates an association between larger firm size and lower CETR in the sample. Since lower CETR may indicate greater tax avoidance, the estimate is consistent with that interpretation, subject to the limits of the proxy and observational design.

This direction is consistent with Tanjaya and Nazir (2021), who reported a negative association between firm size and tax avoidance in a study of consumer-goods manufacturers. The different sector, period, and tax proxy limit direct comparison.

Overall Fixed-Effects Model

The reported overall FEM F-statistic was 3.787610 ($p = 0.002386$). Because an overall fixed-effects statistic can incorporate firm effects and does not isolate the three slope coefficients in the supplied output, it cannot be used to conclude that those three explanatory variables are jointly significant. A dedicated joint restriction test for KI, AQ, and LN would be needed for that claim.

The adjusted R-squared of 0.416832 describes the full fixed-effects specification, including firm-specific effects. It is not a measure of the explanatory contribution of KI, AQ, and LN alone. The source does not provide an adjusted R-squared that excludes the fixed effects.

CONCLUSION

In this sample of eight Indonesian mining firms observed from 2021 to 2025, the partial FEM coefficients for institutional ownership ($p = 0.5840$) and audit quality ($p = 0.1477$) were not statistically significant, while firm size was negatively associated with CETR (coefficient = -1.385202 , $p = 0.0004$). The overall FEM F-statistic was significant, but the available output does not establish a joint test of only the three slopes. The adjusted R-squared reflects the full fixed-effects specification. The findings are limited by the 40-observation sample, the single CETR proxy, and incomplete documentation of the audit-quality composite, including the coding of audit tenure and the reported maximum score of 6.

Mining firms should maintain tax compliance and sound governance when managing tax costs. Investors may consider tax indicators alongside financial and governance information. Future research could use a larger sample, extend the observation period, compare alternative tax-avoidance proxies, document audit-quality coding transparently, and report a joint test restricted to the three slope coefficients as well as model fit with firm effects clearly distinguished.

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