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Examining the Impact of Tax Avoidance on Firm Profitability: Evidence of the Nonlinear Moderating Role of CFO Compensation in Non-Financial Companies Listed on the Indonesia Stock Exchange

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Abstract

Tax avoidance is widely used as a corporate strategy to reduce tax burdens; however, its impact on firm profitability remains inconclusive, particularly due to differences in measurement approaches. In addition, the moderating role of Chief Financial Officer (CFO) compensation especially in a non-linear form has been underexplored in emerging markets such as Indonesia. This study examines the relationship between tax avoidance and firm profitability and analyzes whether CFO compensation moderates this relationship in a non-linear pattern. Tax avoidance is measured using two complementary proxies: TAETR (one minus the accrual-based Effective Tax Rate, representing book-based tax avoidance) and TACETR (one minus the Cash Effective Tax Rate, representing cash-based tax avoidance). The study uses panel data from 98 non-financial firms listed on the Indonesia Stock Exchange during 2020–2024, consisting of 481 firm-year observations. The analysis is conducted using a Fixed Effects Model with firm-clustered robust standard errors and year fixed effects, supported by robustness checks using alternative profitability measures and lagged specifications. The results indicate that accrual-based tax avoidance is negatively associated with profitability, while cash-based tax avoidance shows a positive association. CFO compensation moderates only the relationship between cash-based tax avoidance and profitability, and this moderation follows an inverted U-shaped pattern. However, the non-linear moderating effect is not fully consistent across model specifications, suggesting that the relationship is proxy-dependent rather than universally applicable. Overall, this study highlights the importance of distinguishing between accrual and cash dimensions of tax avoidance and provides evidence of a contingent and non-linear role of CFO compensation in shaping profitability outcomes in an emerging-market context.

KEYWORDS

CFO compensation; fixed effects model; profitability; tax avoidance; tournament theory.

Introduction

Tax represents one of the most substantial cost components in corporate financial structures, making tax management a strategic instrument for improving efficiency and profitability. Within this context, tax avoidance defined as managerial efforts to minimize effective tax burdens within legal boundaries has become a central topic in accounting and public finance research. Recent studies emphasize that tax avoidance is not merely a compliance issue but a strategic financial decision that may influence profitability, risk exposure, and long-term firm sustainability (Beer et al., 2020; Drake et al., 2020).

This relevance is increasingly important in the context of digital transformation, where digital-native generations dominate managerial and investor behavior, accelerating information transparency and increasing scrutiny over corporate tax practices.

In emerging economies such as Indonesia, tax avoidance is particularly salient due to structural limitations in tax capacity and enforcement. OEC (Development, 2024) reports that Indonesia's tax ratio remains around 12% of GDP, significantly below both the Asia-Pacific average (19.6%) and the OECD average exceeding 30%. This gap reflects persistent challenges in tax compliance and enforcement, as well as the prevalence of aggressive tax planning practices. Prior evidence shows that multinational and large domestic firms often engage in profit-shifting strategies such as transfer pricing, intra-group financing, and royalty arrangements to reduce taxable income (Beer et al., 2020). These practices not only erode the tax base but also raise questions regarding whether tax avoidance enhances or undermines firm-level profitability.

From a theoretical perspective, the relationship between tax avoidance and profitability remains ambiguous. On one hand, tax savings can increase after-tax earnings and provide additional internal financing for investment, supporting higher profitability. On the other hand, aggressive tax strategies may increase regulatory scrutiny, legal risk, and reputational damage, which can offset financial gains. Empirical evidence further shows that capital markets often penalize aggressive tax behavior due to perceived uncertainty and governance risk (Gindara & Umiyati, 2023). This mixed evidence suggests that the effect of tax avoidance on profitability is context-dependent and potentially non-linear.

A key methodological issue in this literature concerns measurement heterogeneity. The Effective Tax Rate (ETR) captures accrual-based tax burden relative to pre-tax income, while the Cash Effective Tax Rate (CETR) reflects actual cash tax payments. Prior research highlights that ETR may be influenced by accounting accruals and deferred tax items, whereas CETR better reflects liquidity-based tax outcomes. Studies such as (Alexander, 2024) and (Sibuea & Afriani, 2025) emphasize that relying on a single proxy may lead to inconsistent findings. Therefore, a multi-proxy approach is necessary to capture the multidimensional nature of tax avoidance.

Beyond measurement issues, managerial roles play a critical part in shaping tax strategies. Within corporate governance structures, the Chief Financial Officer (CFO) holds primary responsibility for financial reporting, liquidity management, and tax planning decisions. Empirical studies show that CFO-specific characteristics have a stronger direct influence on tax outcomes compared to CEOs, particularly in cash-based tax strategies (Alkebeese et al., 2022; Liu et al., 2023). This is especially relevant in environments where digital-native financial systems increase real-time monitoring of cash flows and tax payments, thereby strengthening the CFO's strategic role.

Executive incentives further complicate this relationship. CFO compensation is widely considered a governance mechanism aligned with Agency Theory (Jensen & Meckling, 1976), while Tournament Theory (Lazear & Rosen, 1981) suggests that competitive pay structures enhance managerial performance. However, recent studies indicate that compensation effects may not be linear. For instance, research on executive incentives and tax behavior suggests diminishing marginal returns of compensation on performance outcomes (Green & Armstrong, 2012; Meilita.S & Pohan.H.T, 2022). This implies the existence of two competing mechanisms: incentive alignment, which encourages tax optimization, and risk-aversion, which discourages aggressive tax behavior.

The interaction of these mechanisms leads to a theoretically plausible inverted U-shaped relationship, where moderate levels of CFO compensation improve decision quality and tax efficiency, while excessively high compensation may induce opportunistic behavior or governance weakening (Liu et al., 2023). Managerial power theory further supports this view by arguing that excessive compensation can weaken monitoring structures and distort decision-making processes. Despite these theoretical arguments, empirical studies explicitly testing non-linear CFO compensation effects on tax avoidance–profitability relationships remain limited, particularly in emerging markets.

A review of prior literature reveals several important gaps. First, most studies are concentrated in developed markets such as the United States and Korea (Yoon et al., 2021), while evidence from Indonesia remains scarce. Second, many studies rely on a single proxy of tax avoidance, limiting their ability to distinguish accrual-based versus cash-based effects (Kim & Im, 2021). Third, the dominant dependent variable in prior research is firm value rather than operational profitability, providing limited insight into real performance outcomes. Fourth, executive-level analyses are predominantly centered on CEOs (Sibuea & Afriani, 2025), despite CFOs having more direct control over tax-related cash flows (Jiang et al., 2010). Fifth, and most importantly, while compensation effects have been studied extensively, most empirical models assume linear relationships, despite theoretical and emerging empirical evidence suggesting non-linear dynamics (Siregar et al., 2025). In particular, there is still limited evidence on whether CFO compensation exhibits a non-linear moderating effect in the Indonesian corporate context.

The intricate dynamics of corporate tax avoidance in Indonesia have prompted extensive investigation into its association with firm profitability, particularly among non-financial entities listed on the Indonesia Stock Exchange, where empirical evidence reveals varying impacts depending on sectoral characteristics and measurement approaches (Pahala et al., 2025). Executive compensation, especially that of chief financial officers (CFOs), has emerged as a critical moderating factor, with recent analyses demonstrating a non-linear, inverted U-shaped relationship between the extent of tax avoidance and CFO remuneration, suggesting that moderate tax planning enhances compensation while aggressive strategies may diminish it (Liu et al., 2023). Employing multi-proxy measurements that integrate both accrual-based indicators, such as the effective tax rate, and cash-based indicators, such as the cash effective tax rate, provides a more comprehensive capture of tax avoidance behaviors in the Indonesian context, as evidenced by cross-country comparisons highlighting Indonesia's relatively high corporate tax avoidance levels with an average CTA score of 0.274 (Pratama, 2025). The complex interactions among measurement heterogeneity, managerial incentive structures, and potential non-linear patterns therefore demand a sophisticated empirical framework to accurately assess how CFO compensation influences the tax avoidance–profitability relationship in emerging market settings (Patricia, 2025).

This study contributes to the literature in several ways. First, it extends prior research by focusing on operating profitability (Return on Assets) rather than firm value, providing a more direct measure of performance. Second, it adopts a multi-proxy approach (ETR and CETR) to capture heterogeneous dimensions of tax avoidance. Third, it emphasizes the distinct role of CFOs rather than CEOs in shaping tax strategies. Fourth, it explicitly tests a non-linear moderating effect of CFO compensation, addressing a gap in prior literature that largely assumes linearity. Finally, by situating the analysis in Indonesia an emerging market with increasing digitalization and rising transparency among digital-native stakeholders this study provides novel empirical evidence on how governance,

incentives, and tax strategies jointly affect firm outcomes.

Overall, this study positions its novelty not as a complete departure from prior literature, but as a refined extension that integrates fragmented strands of research into a unified framework combining multi-proxy tax avoidance measurement, CFO-level governance effects, and non-linear incentive structures in an emerging-market context.

Methods

Research Type

This study employs a quantitative approach with an explanatory design using panel data (panel data explanatory study). The research is grounded in the positivist paradigm, which assumes that corporate financial behavior can be objectively measured using observable quantitative indicators. The study examines the associative relationship between tax avoidance and firm profitability and evaluates the moderating role of Chief Financial Officer (CFO) compensation, including its potential non-linear effect. The panel data framework is used because it combines cross-sectional (firm-level) and time-series (2020–2024) dimensions, thereby improving estimation efficiency and controlling for unobserved heterogeneity across firms.

However, consistent with corporate finance research, this observational design may still be affected by endogeneity issues such as reverse causality and omitted variable bias. Therefore, the results are interpreted as associative rather than strictly causal relationships. Moderated Regression Analysis (MRA) is applied within a fixed-effects panel regression framework to capture both linear and non-linear moderating effects, supported by Agency Theory, Tournament Theory, and managerial risk behavior perspectives.

Population and Sample

The population consists of all non-financial firms listed on the Indonesia Stock Exchange (IDX) during 2020–2024. Financial firms are excluded due to differences in regulatory frameworks, capital structure, and taxation systems.

1. Sample selection is conducted using purposive sampling with the following criteria:
2. Firms listed continuously during 2020–2024 (balanced panel requirement).
3. Availability of complete audited financial statements and annual reports.
4. Disclosure of CFO or executive compensation data.
5. Availability of complete data for all research variables.

This sampling procedure ensures data completeness but may introduce selection bias, as firms with higher disclosure quality are more likely to be included. Therefore, results are more representative of firms with relatively stronger governance transparency.

Research Location

The study is conducted at the national level using publicly listed firms in Indonesia through the Indonesia Stock Exchange (IDX). Indonesia is selected due to its dynamic tax policy environment, including corporate tax adjustments and ongoing tax administration reforms during the observation period.

Instrumentation and Variables

The study uses secondary data collected from:

1. Audited financial statements
2. Annual and sustainability reports
3. Company prospectuses
4. S&P Capital IQ database
5. OJK regulatory publications

Variable Measurement:

1. Tax Avoidance: TAETR and TACETR
2. Profitability: Return on Assets (ROA)
3. CFO Compensation: Natural logarithm of total compensation (mean-centered)
4. Control Variables: Firm size, leverage, sales growth, family ownership, asset tangibility, cash holdings

Data transformations include winsorization (1%–99%) and mean-centering to improve statistical reliability and reduce bias from extreme values.

Data Collection Procedure

Data collection is conducted through a structured documentation process consisting of the following stages:

1. Sample identification based on inclusion criteria
2. Data retrieval from IDX official website, company reports, and databases
3. Variable extraction from financial statements and notes
4. Cross-validation using S&P Capital IQ
5. Dataset construction into firm-year panel format
6. Data cleaning, including:
 - Removal of negative pre-tax income observations
 - Winsorization of extreme values
 - Transformation and standardization of CFO compensation

Flowchart of Research Procedure

The overall research procedure is summarized in the following flowchart (see Figure 1)

Explanation of Flowchart Stages:

1. Stages 1–3 ensure data availability and sample validity
2. Stage 4–5 ensure dataset reliability and consistency
3. Stage 6–8 establish statistical validity and appropriate model selection
4. Stage 9–10 test hypotheses including non-linear moderation effects
5. Stage 11 ensures robustness of findings across alternative specifications
6. Stage 12 synthesizes empirical results into final conclusions

Data Analysis

Data analysis is conducted in structured stages:

1. Descriptive Analysis
 - Provides summary statistics to describe distribution and variation of variables.
2. Diagnostic Tests
 - Multicollinearity test (VIF)
 - Heteroskedasticity and autocorrelation handling using firm-clustered robust standard errors
 - Panel assumption checks
3. Panel Model Selection
 - Chow Test (Pooled vs Fixed Effects)
 - Breusch–Pagan LM Test (Pooled vs Random Effects)
 - Hausman Test (Fixed vs Random Effects) → Fixed Effects Model is selected as the main specification.
4. Panel Regression (MRA Model)

$$Y_{it} = \alpha + \beta_1 TP_{it} + \beta_2 M_{it} + \beta_3 M_{it}^2 + \beta_4 (TP_{it} \times M_{it}) + \beta_5 (TP_{it} \times M_{it}^2) + \sum \beta_k Controls_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where:

Y_{it} : ROA (main model), ROE (robustness check)

TP_{it} : tax avoidance (TAETR / TACETR)

M_{it} : mean-centered CFO compensation

M_{it}^2 : squared CFO compensation

μ_i : firm fixed effects

λ_t : year fixed effects

5. Hypothesis Testing

- Significance of interaction terms
- Moderation effect testing



Figure 1. Research Flowchart

- Inverted U-shape test (Lind & Mehlum, 2010)
 - Turning point analysis
6. Robustness Checks
- Alternative dependent variable (ROE)
 - Lagged independent variables
 - Comparison between TAETR and TACETR models

Ethical Considerations

This study uses secondary data only and does not involve human participants. Ethical compliance is ensured through:

- Use of publicly available data
- Proper citation of data sources
- No manipulation of reported financial information
- Objective reporting of empirical findings

Result and Discussion

Overview of the Research Object

The initial sample consisted of 98 non-financial firms observed over five years (2020–2024), yielding 490 firm-year observations. During data screening, nine observations were excluded because CFO compensation data were unavailable.

Consequently, the final dataset comprised 481 firm-year observations. Therefore, the final dataset should be classified as a near-balanced (unbalanced) panel rather than a perfectly balanced panel. Specifically, 92 firms (93.88%) contributed complete observations over the five-year period, while the remaining firms had one or more missing observations due to disclosure limitations. Although the panel is not perfectly balanced, the proportion of missing observations is relatively small (1.84% of the original sample), allowing reliable estimation using the Fixed Effects Model.

The sample composition indicates that family firms accounted for 305 observations (63.41%), whereas non-family firms represented 176 observations (36.59%), reflecting the dominance of family ownership structures in publicly listed Indonesian companies. To measure tax avoidance, the study employed two complementary proxies: Tax Avoidance Effective Tax Rate (TAETR) and Tax Avoidance Cash Effective Tax Rate (TACETR). Both measures, together with ROA, sales growth, and cash holdings, were winsorized at the 1st and 99th percentiles to mitigate the influence of extreme values and improve data reliability. The use of multiple tax avoidance proxies was intended to enhance the robustness of the empirical findings and to capture the conceptual distinction between accrual-

Table 1. Descriptive Statistics Before and After Winsorization

Aspect	Before Winsorization	After Winsorization	Interpretation
Sample Size (N)	481 observations	481 observations	Winsorization preserved the full sample without deleting observations.
Variables Requiring Treatment	ROA, ROE, TAETR, TACETR, GROWTH, LIQUID	Winsorized at the 1st and 99th percentiles	These variables exhibited substantial outliers and highly leptokurtic distributions.
Most Extreme Variable	TAETR (Kurtosis = 170.21)	Mean = 0.2387; Max reduced from 6.9852 to 0.9432	Significant reduction in extreme observations associated with tax avoidance measures.
Profitability Measures	ROA (Kurtosis = 12.39); ROE (Kurtosis = 16.43)	ROA Mean = 0.0721; ROE Mean = 0.1250	Profitability distributions became more stable while preserving central tendencies.
Growth Variable	GROWTH (Kurtosis = 115.90)	Mean = 0.2362; SD reduced from 1.0475 to 0.6077	Extreme growth observations were substantially moderated.
Liquidity Variable	LIQUID (Kurtosis = 6.07)	Mean = 0.1081	Improved distributional properties with minimal impact on the mean.
Variables Not Winsorized	COMP, FIRMSIZE, LEV, CAPINT	Unchanged	These variables already exhibited acceptable distributional characteristics (kurtosis < 5).
CFO Compensation (COMP)	Mean = 7.2775	Mean = 7.2775	Indicates substantial variation in executive compensation across firms.
Family Firms	63.41% of sample	63.41% of sample	Family-controlled firms dominate the study sample.
Leverage	Mean = 0.3922	Mean = 0.3922	Approximately 39% of corporate assets are financed through debt.

Source: Processed data, 2026

Table 2. Pearson Correlation Matrix

	ROA	TAETR	TACETR	COMP	SIZE	LEV	GRWTH	CAPINT	LIQUID
ROA	1,000								
TAETR	-0,272*	1,000							
TACETR	0,225*		1,000						
COMP	0,199*	-0,037	-0,005	1,000					
SIZE	0,039	-0,011	-0,012	0,757*	1,000				
LEV	-0,208*	0,096*	-0,174*	0,200*	0,264*	1,000			
GRWTH	0,123*	-0,037	0,041	-0,152*	-0,154*	0,018	1,000		
CAPINT	0,009	-0,054	0,136*	0,061	-0,003	-0,031	-0,066	1,000	
LIQUID	0,315*	-0,117*	-0,016	0,138*	0,096*	-0,229*	0,090*	-0,291*	1,000
FAMILY	0,159*	-0,131*	0,062	-0,038	0,028	-0,171*	-0,022	0,187*	0,085

Source: Processed data, 2026. * significant at the 5% level.

based tax burdens and actual cash tax payments, thereby providing a more comprehensive assessment of the relationship between tax avoidance practices and corporate profitability.

Descriptive Statistics

The descriptive statistics reveal a substantial distinction between variables exhibiting normal distribution characteristics and those affected by extreme observations (see Table 1). Prior to winsorization, six variables TAETR, TACETR, GROWTH, ROA, ROE, and LIQUID displayed excessive kurtosis values exceeding conventional thresholds, indicating highly leptokurtic distributions and the presence of influential outliers. Among these variables, TAETR and GROWTH demonstrated particularly severe distributional problems, with kurtosis values of 170.21 and 115.90, respectively. In contrast, COMP, FIRMSIZE, LEV, and CAPINT exhibited relatively normal distributions and therefore did not require transformation. These findings justify the application of winsorization to mitigate the influence of extreme observations while preserving the integrity of the sample. Following winsorization at the 1st and 99th percentiles, the sample size remained unchanged at 481 observations, ensuring that no information was lost during data treatment. The procedure substantially reduced extreme values, particularly for TAETR, ROA, ROE, GROWTH, and LIQUID, while

maintaining relatively stable mean values. The post-winsorization statistics indicate that sample firms generated an average ROA of 7.21% and ROE of 12.50%, reflecting generally positive profitability performance. Tax avoidance measures suggest that firms engaged in varying degrees of tax-saving activities, with average TAETR and TACETR values of 23.87% and 61.70%, respectively. Furthermore, the sample is characterized by moderate leverage levels, considerable variation in CFO compensation, and a strong prevalence of family ownership (63.41%), highlighting the distinctive governance structure of the observed firms. These results indicate that the data became more suitable for subsequent regression analysis while retaining their underlying economic characteristics.

Diagnostic Assessment of Panel Data Assumptions Correlation Analysis

A notable finding in Table 2 is the negative correlation between TAETR and ROA ($r = -0.272$, $p < 0.05$). This result suggests that higher levels of accrual-based tax avoidance tend to be associated with lower profitability. Several explanations may account for this pattern. First, accrual-based tax avoidance often involves complex accounting adjustments and deferred tax arrangements that generate additional compliance, monitoring, and agency costs. Second, aggressive tax reporting may increase uncertainty regarding earnings quality and future

Table 3. Variance Inflation Factor (VIF) Test Results

Variabel	VIF (ETR)	1/VIF	VIF (CETR)	1/VIF
TAETR / TACETR	1,61	0,621	1,49	0,670
COMP_mc	3,12	0,321	3,84	0,260
COMP_mc ²	1,23	0,815	5,03	0,199
TA × COMP_mc	2,26	0,442	2,28	0,439
TA × COMP_mc ²	2,10	0,475	5,43	0,184
FIRMSIZE	2,72	0,368	2,64	0,378
LEV	1,22	0,820	1,26	0,792
GROWTH	1,06	0,941	1,07	0,935
CAPINT	1,20	0,830	1,23	0,812
LIQUID	1,32	0,760	1,30	0,767
FAMILY	1,12	0,891	1,11	0,902
Mean VIF	1,72		2,43	

Source: Processed data, 2026

Table 4. Residual Diagnostic Test Results

Test	Test Statistic	p-value	Conclusion
Residual Distribution (TAETR-ROA)	Shapiro-Wilk W = 0.8818	0.0000	Not normal
	Skew/Kurt $\chi^2(2)$ = 138.68	0.0000	Not normal
Residual Distribution (TACETR-ROA)	Shapiro-Wilk W = 0.8758	0.0000	Not normal
	Skew/Kurt $\chi^2(2)$ = 144.14	0.0000	Not normal
Heteroskedasticity (TAETR-ROA)	Breusch-Pagan $\chi^2(1)$ = 52.54	0.0000	Heteroskedastic
Heteroskedasticity (TACETR-ROA)	Breusch-Pagan $\chi^2(1)$ = 37.87	0.0000	Heteroskedastic
Autocorrelation (TAETR-ROA)	Wooldridge F(1, 97) = 7.957	0.0058	Autocorrelation detected
Autocorrelation (TACETR-ROA)	Wooldridge F(1, 97) = 7.110	0.0090	Autocorrelation detected

Source: Processed data, 2026

Table 5. Results of Panel Data Model Selection

Test	Model	Statistic	p-value	Decision
Chow Test (PLS vs FEM)	TAETR-ROA	F(97,369) = 6.13	0.0000	FEM > PLS
	TACETR-ROA	F(97,369) = 6.57	0.0000	FEM > PLS
Breusch-Pagan LM Test (PLS vs REM)	TAETR-ROA	$\chi^2(01)$ = 222.69	0.0000	REM > PLS
	TACETR-ROA	$\chi^2(01)$ = 232.39	0.0000	REM > PLS
Hausman Test (FEM vs REM)	TAETR-ROA	$\chi^2(12)$ = 21.17	0.0480	FEM
	TACETR-ROA	$\chi^2(12)$ = 24.54	0.0172	FEM

Source: Processed data, 2026. *** p < 0.01; ** p < 0.05; * p < 0.10.

tax exposure, thereby reducing operational efficiency. Third, the TAETR measure captures not only tax-saving activities but also accounting treatments related to deferred taxes, which may not immediately generate cash-flow benefits. Consequently, the negative relationship should not be interpreted as evidence that all tax avoidance reduces profitability, but rather that accrual-based tax avoidance may be accompanied by implicit costs that offset its potential benefits.

In contrast, TACETR exhibits a positive correlation with profitability ($r = 0.225$, $p < 0.05$), indicating that actual cash tax savings are more directly translated into additional resources available for investment and operational activities. This contrast highlights the importance of distinguishing between accrual-based and cash-based tax avoidance measures when evaluating firm performance.

Multicollinearity Assessment

The multicollinearity test results indicate that all independent, interaction, and quadratic variables in both model specifications exhibit VIF values below the commonly accepted threshold of 10, suggesting the absence of serious multicollinearity concerns (see Table 3). The TAETR model demonstrates a lower average VIF (1.72) than the TACETR model (2.43), indicating relatively weaker correlations among explanatory variables. Although several interaction and quadratic terms in the TACETR model display comparatively higher VIF values, particularly TA × COMP_mc² (5.43), these values remain within acceptable limits and reflect structural

multicollinearity typically observed in non-linear moderated regression models. Furthermore, the mean-centering procedure applied to CFO compensation variables effectively mitigated collinearity effects, thereby supporting the reliability and stability of subsequent regression estimations.

Testing for Heteroscedasticity, Autocorrelation, and Residual Distribution

The residual diagnostic tests indicate that both TAETR-ROA and TACETR-ROA models exhibit non-normal residual distributions, significant heteroskedasticity, and first-order autocorrelation, as evidenced by p-values below 0.01 across all tests (see Table 4). These findings suggest that the error terms do not satisfy several conventional OLS assumptions, a condition commonly observed in corporate financial panel datasets. Nevertheless, residual normality is not a formal requirement for large-sample panel estimators because asymptotic properties ensure valid statistical inference under the Central Limit Theorem. Therefore, the study employs clustered robust standard errors at the firm level to obtain consistent and reliable inference that is robust to both heteroskedasticity and within-firm serial correlation.

Panel Data Model Selection Analysis

The panel data model selection procedure consistently supports the Fixed Effects Model (FEM) as the most appropriate estimation approach for both the TAETR-ROA and TACETR-ROA models (see Table 5). The significant Chow test results indicate substantial firm-specific heterogeneity, suggesting

Table 6. Summary of Hierarchical Panel Regression Results: TAETR Model on ROA

Variable	Model 1 (REM)	Model 2 (REM)	Model 3 (REM)	Model 4 (FEM)
TAETR (β_1)	-0.0546***	-0.0617***	-0.0624***	-0.0576***
COMP_mc (β_2)		0.0102**	0.0177***	0.0073
COMP_mc ² (β_3)			0.0029***	0.0018*
TAETR × COMP_mc (β_4)		0.0088	0.0020	0.0020
TAETR × COMP_mc ² (β_5)			0.0026	0.0025
FIRMSIZE	-0.0003	-0.0065**	-0.0099***	-0.0329***
LEV	-0.0349*	-0.0362*	-0.0361*	-0.0188
GROWTH	0.0113**	0.0106**	0.0109**	0.0097**
FAMILY	0.0161	0.0185	0.0171	Absorbed
CAPINT	-0.0103	-0.0134	-0.0162	-0.0628
LIQUID	0.0804**	0.0750*	0.0709**	0.0511
Constant	0.0750	0.1673***	0.2119***	0.5553***
R ² Within	0.1400	0.1403	0.1610	0.1921
Observations	481	481	481	481
Firms	98	98	98	98

*Source: Processed data (2026). Clustered robust standard errors by firm. Year fixed effects included. *p < 0.10; **p < 0.05; ***p < 0.01.

Table 7. Panel Regression Results - TACETR Model on ROA

Variables	Model 1 (REM)	Model 2 (REM)	Model 3 (REM)	Model 4 (FEM)
TACETR (β_1)	0.0159*** (0.0034)	0.0162*** (0.0026)	0.0194*** (0.0024)	0.0207*** (0.0037)
COMP_mc (β_2)		0.0076 (0.0054)	0.0153*** (0.0047)	0.0039 (0.0062)
COMP_mc ² (β_3)			0.0051*** (0.0012)	0.0046*** (0.0014)
TACETR × COMP_mc (β_4)		0.0045* (0.0027)	0.0046** (0.0021)	0.0048* (0.0025)
TACETR × COMP_mc ² (β_5)			-0.0023** (0.0010)	-0.0033** (0.0014)
FIRMSIZE	-0.0003 (0.0033)	-0.0059* (0.0033)	-0.0105*** (0.0030)	-0.0311*** (0.0106)
LEV	-0.0273 (0.0205)	-0.0243 (0.0206)	-0.0221 (0.0212)	-0.0039 (0.0348)
GROWTH	0.0119*** (0.0045)	0.0124*** (0.0046)	0.0129*** (0.0048)	0.0124*** (0.0046)
FAMILY	0.0188 (0.0115)	0.0207* (0.0115)	0.0199* (0.0113)	absorbed
CAPINT	-0.0167 (0.0236)	-0.0181 (0.0229)	-0.0235 (0.0228)	-0.0677 (0.0565)
LIQUID	0.0772** (0.0386)	0.0747** (0.0364)	0.0680** (0.0336)	0.0366 (0.0398)
Constant	0.0509 (0.0485)	0.1292*** (0.0501)	0.1880*** (0.0457)	0.4993*** (0.1578)
R ² Within	0.1556	0.1579	0.1912	0.2217
Observations	481	481	481	481
Firms	98	98	98	98

Source: Processed data, 2026. Clustered robust standard errors by firm are reported in parentheses. Year fixed effects are included. * p < 0.10; ** p < 0.05; *** p < 0.01.

that FEM provides a better fit than Pooled Least Squares (PLS). Although the Breusch–Pagan LM test demonstrates that Random Effects Model (REM) outperforms PLS, the significant Hausman test results reject the null hypothesis of REM consistency, confirming the statistical superiority of FEM. Consequently, the study employs FEM with clustered robust standard errors at the firm level and year fixed effects to control for unobserved firm-specific characteristics and common temporal shocks, thereby enhancing the reliability of the estimated relationships between tax avoidance, CFO compensation moderation, and profitability.

Main Model Regression Analysis

Stepwise Model - ETR Proxy (TAETR on ROA)

The hierarchical panel regression results demonstrate

that TAETR consistently exhibits a significant negative association with ROA across all model specifications, indicating that higher levels of accrual-based tax avoidance are associated with lower corporate profitability (see Table 6). The inclusion of CFO compensation variables and their quadratic term in Models 2 and 3 increases the explanatory power of the model, as reflected by the rise in the within R² from 0.1400 to 0.1610. In the full moderation model estimated using the Fixed Effects Model (Model 4), the within R² further improves to 0.1921, while the negative effect of TAETR remains statistically significant ($\beta = -0.0576$; $p < 0.01$). However, neither the linear nor the quadratic interaction terms between TAETR and CFO compensation achieve statistical significance, suggesting that CFO compensation does not moderate the relationship between accrual-based tax avoidance and profitability.

Furthermore, the family firm variable is absorbed by firm fixed effects in the FEM specification because it remains time-invariant throughout the observation period, preventing separate coefficient estimation.

Stepwise Model - CETR Proxy (TACETR on ROA)

The regression results using TACETR as an alternative cash-based tax avoidance proxy indicate a consistently positive and statistically significant relationship between tax avoidance and firm profitability across all model specifications (see Table 7). The coefficient of TACETR increases from 0.0159 in Model 1 to 0.0207 in Model 4, suggesting that greater cash tax savings are associated with higher ROA and that this effect remains robust after controlling for firm-specific heterogeneity through the fixed-effects model. The final FEM specification reveals a positive and significant interaction between TACETR and CFO compensation ($\beta_4 = 0.0048$; $p < 0.10$) alongside a negative and significant quadratic interaction term ($\beta_5 = -0.0033$; $p < 0.05$), indicating the presence of an inverted U-shaped moderating effect of compensation on the tax avoidance–profitability relationship. This pattern suggests that increases in CFO compensation initially strengthen the positive profitability benefits of tax avoidance, but the marginal effect diminishes and eventually weakens at higher compensation levels. Furthermore, the higher within R^2 value of 0.2217 relative to the TAETR model demonstrates that the cash-based tax avoidance specification provides greater explanatory power in capturing variations in firm profitability.

Hypothesis Testing

Hypothesis 1: The Effect of Tax Avoidance on Profitability

- H1a: Accrual-based tax avoidance (TAETR) has a negative effect on corporate profitability.
- H1b: Cash-based tax avoidance (TACETR) has a positive effect on corporate profitability.

The estimation results of Model 4 FEM using both proxies indicate that tax avoidance significantly affects corporate profitability, although the direction of the relationship differs depending on the measurement proxy employed. In the ETR-based model, the coefficient of TAETR is negative and highly significant ($\beta = -0.0576$; $t = -4.87$; $p < 0.01$). Economically, a one-unit increase in TAETR, indicating a higher level of accrual-based tax avoidance activity, is associated with a 5.76 percentage-point decrease in ROA, *ceteris paribus*. This negative relationship is consistent with the agency theory perspective, which argues that aggressive tax avoidance may increase agency costs through greater organizational complexity, heightened audit risk, and potential sanctions from tax authorities (Desai & Dharmapala, 2006). Therefore, Hypothesis 1a is supported.

In the CETR-based model, the coefficient of TACETR is positive and highly significant ($\beta = 0.0207$; $t = 5.62$; $p < 0.01$). This finding indicates that cash tax savings are positively associated with profitability. A one-unit increase in TACETR is associated with a 2.07 percentage-point increase in ROA. This result is consistent with the argument that lower cash tax payments directly increase the cash flow available to firms, which can subsequently be allocated to productive investments and liquidity enhancement (Dyreg et al., 2008). Therefore, Hypothesis 1b is also supported. The difference in coefficient direction between the ETR and CETR models represents an important conceptual finding rather than a methodological inconsistency. ETR reflects accrual-based tax expenses influenced by various accounting policies and deferred tax adjustments, whereas CETR measures actual cash tax expenditures. The profitability benefits of tax avoidance are more clearly identified through cash tax savings, while reductions in the accrual-based effective tax rate may instead reflect more aggressive tax avoidance

behavior accompanied by higher implicit costs. Overall, Hypothesis 1 is supported across both model specifications, with the important caveat that the measurement proxy substantially influences the interpretation of the relationship's direction.

Hypothesis 2: The Moderating Role of CFO Compensation

- H2: CFO compensation moderates the relationship between tax avoidance and corporate profitability.

The moderating effect was tested through the analysis of the interaction term coefficient ($TA \times COMP_mc$) in Model 4 FEM. In the TAETR-ROA model, the coefficient of the linear interaction term ($\beta_4 = 0.0020$) is not statistically significant ($t = 0.26$; $p = 0.793$). This result indicates that, under the accrual-based tax avoidance measure, CFO compensation does not exhibit a statistically identifiable moderating effect. In the TACETR-ROA model, the coefficient of the linear interaction term is significant at the 10% level ($\beta_4 = 0.0048$; $t = 1.94$; $p = 0.055$), while the coefficient of the quadratic interaction term is significant at the 5% level ($\beta_5 = -0.0033$; $t = -2.45$; $p = 0.016$). These findings indicate that CFO compensation moderates the relationship between cash-based tax avoidance and profitability, following a pattern consistent with the proposed non-linear hypothesis. In firms with higher levels of CFO compensation (below the turning point), the positive effect of cash tax savings on profitability becomes stronger before gradually weakening beyond the turning point. This finding is consistent with the argument that higher compensation creates stronger incentives for CFOs to manage taxes efficiently in order to improve corporate financial performance (Armstrong et al., 2012). Based on the results from both model specifications, Hypothesis 2 is partially supported. The moderating effect of CFO compensation is significantly identified in the CETR model, whereas no statistically significant moderating effect is observed in the ETR model. This pattern is consistent with the argument that cash tax payment decisions are more directly under the operational control of CFOs than deferred tax accounting policies that influence ETR.

Hypothesis 3: Non-Linear Moderation (Inverted U-Shape)

- H3: The moderating effect of CFO compensation on the relationship between tax avoidance and profitability is non-linear and follows an inverted U-shaped pattern.

The non-linearity hypothesis was tested using three procedures as recommended by Lind and Mehlum (2010), namely evaluating the signs of the linear interaction coefficient (β_4) and the quadratic interaction coefficient (β_5), testing the statistical significance of these coefficients, and verifying whether the turning point lies within the observed data range. In the TAETR-ROA model, the linear interaction coefficient ($\beta_4 = 0.0020$) and the quadratic interaction coefficient ($\beta_5 = 0.0025$) were both individually insignificant ($p = 0.793$ and $p = 0.332$, respectively). The positive sign of β_5 does not support an inverted U-shaped pattern. These results indicate that a non-linear inverted U-shaped moderation pattern is not identified in the ETR-based specification. In the TACETR-ROA model, the linear interaction coefficient was significantly positive ($\beta_4 = 0.0048$; $p = 0.055$), while the quadratic interaction coefficient was significantly negative ($\beta_5 = -0.0033$; $p = 0.016$).

Hypothesis 3 receives only partial support because the proposed inverted U-shaped moderating effect is observed exclusively in the TACETR specification and not in the TAETR specification. In the TAETR model, neither the linear interaction term nor the quadratic interaction term reaches statistical significance. This suggests that CFO compensation does not systematically alter the relationship between accrual-based tax avoidance and profitability. Several factors may explain this result. First, TAETR largely reflects accounting-based tax outcomes that are influenced by deferred tax assets, deferred tax liabilities, and financial reporting policies. These

Table 8. Summary of Hypothesis Testing Results

No.	Hypothesis	Main Model (ROA)	ROE Robustness	Lag Robustness (FEM)	Final Status
H1a	TAETR has a negative effect on profitability	$\beta = -0.0576^{***}$	$\beta = -0.1550^{***}$	$\beta = -0.0484$ (n.s.; $p = 0.108$)	Conditionally supported
H1b	TACETR has a positive effect on profitability	$\beta = 0.0207^{***}$	$\beta = 0.0482^{***}$	$\beta = 0.0072^{**}$	Robustly supported
H2	CFO compensation moderates the tax avoidance–profitability relationship	CETR: significant; ETR: not significant	CETR: significant; ETR: not significant	Not confirmed for either proxy (joint test $p > 0.36$)	Partially supported in the contemporaneous model
H3	The moderation effect is non-linear and follows an inverted U-shape	CETR: confirmed (TP = IDR 2.99 billion)	CETR: confirmed (TP = IDR 3.64 billion)	Not confirmed (joint test $F = 0.01$; $p = 0.989$)	Exploratorily supported in the contemporaneous model

Source: Processed data, 2026. $p < 0.01$; $p < 0.05$; $p < 0.10$. TP = Turning Point. n.s. = not significant at $\alpha = 0.10$. The “conditional” status for H1a indicates strong support in the contemporaneous models (ROA and ROE) but attenuation after temporal separation through a lag-1 specification. The “exploratory” status for H3 indicates that the inverted U-shape pattern was consistently confirmed across profitability measures but did not persist after temporal separation, thereby requiring further methodological confirmation.

Table 9. Marginal Effect of Tax Avoidance on ROA at Various Levels of CFO Compensation

Percentile	COMP (Ln)	COMP (mc)	ME TAETR	ME TACETR	Sig. ME
P10	5.5642	-1.7133	-0.0571	0.0125	$p < 0.01$ (CETR)
P25	6.2916	-0.9860	-0.0568	0.0174	$p < 0.01$ (CETR)
P50	7.3247	0.0471	-0.0576	0.0207	$p < 0.01$ (CETR)
P75	8.2506	0.9730	-0.0532	0.0222	$p < 0.01$ (CETR)
P90	8.8774	1.5999	-0.0490	0.0204	$p < 0.01$ (CETR)

Source: Processed data, 2026. $ME = \beta_1 + \beta_4 M + \beta_5 M^2$. Estimated from FEM Model 4 for each respective model.

components are not fully under the direct operational control of CFOs and are often shaped by accounting standards and long-term reporting considerations. Second, the economic benefits of accrual-based tax avoidance may be less visible in current-period profitability because they do not necessarily generate immediate cash-flow advantages. Third, the managerial incentives created by CFO compensation are likely to be more closely linked to cash management and liquidity outcomes than to accounting-based tax adjustments.

By contrast, the inverted U-shaped moderation is significant in the TACETR model, indicating that CFO incentives are more effective when tax avoidance generates tangible cash savings. This finding suggests that the non-linear moderating role of CFO compensation is proxy-dependent rather than universally applicable, thereby explaining why H3 cannot be considered fully supported. The evidence indicates that CFO compensation strengthens profitability-enhancing tax strategies only when tax avoidance is reflected in actual cash tax reductions.

Overall, the empirical evidence provides differentiated levels of support across hypotheses (see Table 8). H1b is robustly supported across all model specifications, whereas H1a is supported only in contemporaneous specifications and weakens under temporal separation. More importantly, H2 and H3 should not be interpreted as fully supported. The moderating and non-linear effects of CFO compensation are identified only in the TACETR model and are absent in the TAETR specification. Accordingly, the evidence should be characterized as partially supported and proxy-dependent, indicating that CFO compensation appears to influence the profitability consequences of tax avoidance only when tax avoidance is measured through actual cash tax savings. This distinction is important because it demonstrates that the moderating mechanism is contingent on how tax avoidance is operationalized rather than representing a universal relationship across all tax avoidance measures.

Turning Point Analysis

The turning point of CFO compensation was calculated

using the formula $M = -\beta_4 / (2\beta_5)^*$ based on the estimation results of Model 4 FEM. In the TAETR-ROA model, the turning point was located at a mean-centered value of -0.3922 , equivalent to $\text{Ln}(\text{COMP}) = 6.8853$ or approximately IDR 977 million in the original scale. In the TACETR-ROA model, the turning point was located at a mean-centered value of 0.7269 , equivalent to $\text{Ln}(\text{COMP}) = 8.0044$ or approximately IDR 2,990 million. Both turning-point values fall within the observed data range (Ln COMP ranging from -0.5108 to 11.5959), confirming the validity of the non-linear pattern in the TACETR model. The difference in the location of the turning points between the two models has important implications. In the TAETR model (for which the interaction term is insignificant), the turning point is located below the sample average CFO compensation ($6.8853 < 7.2775$). In the significant TACETR model, the turning point is located above the sample average ($8.0044 > 7.2775$), indicating that the majority of firms in the sample remain within the incentive-alignment zone, where increases in CFO compensation continue to strengthen the positive effect of cash tax avoidance on profitability. Only firms with CFO compensation above $\text{Ln } 8.00$ (approximately IDR 2.99 billion per year) enter the diminishing-returns zone, where the positive effect begins to decline. The turning point should be read as the statistical inflection point of the estimated moderation function rather than as a normatively optimal pay level. Because it is a ratio of two estimated coefficients, its precision is limited; a cluster-bootstrap procedure (500 firm-level resamples) places the turning point of the TACETR–ROA model within the observed range of CFO compensation but with a wide empirical confidence interval, while the joint significance test of the two interaction terms (Lind & Mehlum, 2010) is the formal basis for inferring the inverted U-shape rather than the individual quadratic coefficient. The Rupiah equivalents are therefore presented as order-of-magnitude illustrations and not as precise benchmarks.

Marginal Effects Analysis

To provide a richer interpretation of the moderating effect, the marginal effect of tax avoidance on ROA was calculated at

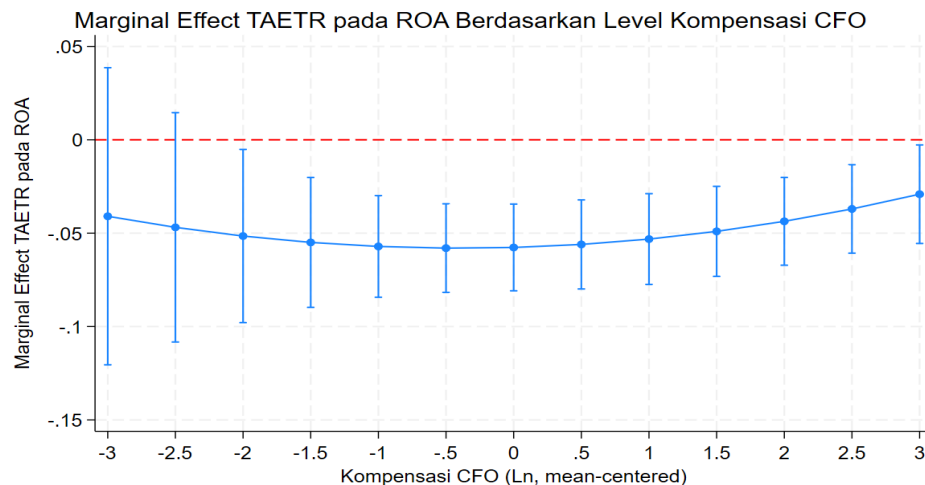


Figure 2. Marginal Effects Plot - TAETR Model on ROA

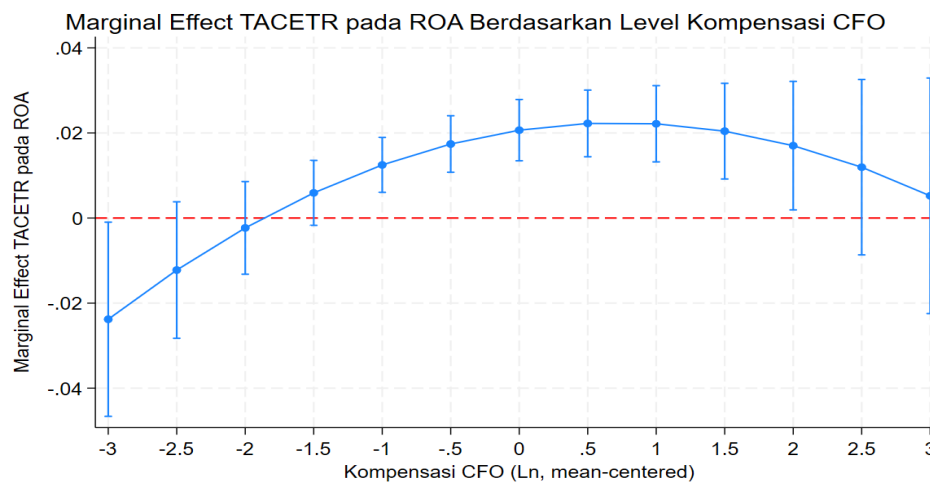


Figure 3. Marginal Effects Plot - TACETR Model on ROA

Table 10. Panel Regression Results - TAETR Model on ROE (Robustness Check)

Variable	Coefficient	Robust SE	t-stat	p-value
TAETR (β_1)	-0.1550***	0.0419	-3.70	0.000
COMP_mc (β_2)	0.0022	0.0138	0.16	0.872
COMP_mc ² (β_3)	0.0026	0.0017	1.56	0.121
TAETR × COMP_mc (β_4)	-0.0372	0.0271	-1.37	0.173
TAETR × COMP_mc ² (β_5)	0.0223***	0.0079	2.82	0.006
FIRMSIZE	-0.0585***	0.0220	-2.66	0.009
LEV	0.2173***	0.0772	2.81	0.006
GROWTH	0.0210**	0.0096	2.19	0.031
CAPINT	-0.1023	0.0837	-1.22	0.225
LIQUID	0.1200	0.0961	1.25	0.215
Constant	0.8817***	0.3146	2.80	0.006
R ² Within	0.2416			
Observations / Firms	481 / 98			

Source: Processed data, 2026. Family firm absorbed by firm fixed effects. Year FE included. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

various percentiles of CFO compensation using the equation $ME = \beta_1 + \beta_4M + \beta_5M^2$.

In the TAETR model, the marginal effects are negative across all levels of CFO compensation (ranging from -0.0571 to -0.0490), indicating that accrual-based tax avoidance consistently exerts a negative impact on profitability (see Table 9). The variation in the marginal effects is relatively small and does not exhibit a clear inverted U-shaped pattern. In the TACETR model, the marginal effects are positive and display a clear inverted U-shaped pattern. The effect increases from 0.0125 at P10 to a peak of 0.0222 at P75, before declining to 0.0204 at P90. The 77.6% increase in the marginal effect from P10 to P75 indicates that the moderating role of CFO compensation is highly substantial in determining the effectiveness of cash-based tax avoidance strategies. Visually, this pattern appears as a concave curve with a peak around P75–P85 (consistent with the turning point at $\text{Ln COMP} = 8.0044$), as illustrated in Figure 2 and Figure 3 below.

The visualization in Figure 2 confirms that the pattern of the marginal effect of TAETR on ROA is consistently negative across all levels of CFO compensation, without a substantive inverted U-shaped pattern. In contrast, Figure 3 visually demonstrates a clear inverted U-shaped pattern in the TACETR model, with the effect peaking around the 75th–85th percentile and subsequently declining. The visual contrast between the two graphs further strengthens the empirical evidence that the non-linear moderating pattern is identified only in the cash-based tax avoidance measure (TACETR), rather than in the accrual-based measure (TAETR).

Robustness Check Using Return on Equity (ROE)

To examine the consistency of the main findings with respect to the choice of profitability measure, a robustness

Table 11. Panel Regression Results TACETR Model on ROE (Robustness Check)

Variable	Coefficient	Robust SE	t-stat	p-value
TACETR (β_1)	0.0482***	0.0063	7.67	0.000
COMP_mc (β_2)	-0.0119	0.0161	-0.74	0.460
COMP_mc ² (β_3)	0.0075**	0.0033	2.30	0.024
TACETR × COMP_mc (β_4)	0.0113**	0.0049	2.33	0.022
TACETR × COMP_mc ² (β_5)	-0.0061**	0.0027	-2.25	0.027
FIRMSIZE	-0.0542**	0.0233	-2.32	0.022
LEV	0.2599***	0.0791	3.29	0.001
GROWTH	0.0241***	0.0087	2.78	0.007
CAPINT	-0.1306	0.0824	-1.58	0.116
LIQUID	0.0816	0.0943	0.87	0.389
Constant	0.7596**	0.3322	2.29	0.024
R ² Within	0.2690			
Observations / Firms	481 / 98			

Source: Processed data, 2026. Family firm absorbed by firm fixed effects. Year FE included. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

check was conducted by replacing the dependent variable from ROA to ROE (Return on Equity). ROE was selected as an alternative measure because it reflects a firm's ability to generate profits for shareholders, while exhibiting greater sensitivity to leverage structure. The model specification and estimation procedure followed Model 4 FEM with clustered robust standard errors at the firm level and year fixed effects.

Estimation Results of the TAETR-ROE Model

The estimation results of the TAETR-ROE model indicate that the TAETR coefficient remains significantly negative ($\beta = -0.1550$; $p < 0.01$), with a larger magnitude than that observed in the TAETR-ROA model (see Table 10). This finding is expected because ROE exhibits greater dispersion than ROA due to its sensitivity to leverage structure. The persistence of the negative TAETR effect across both profitability specifications (ROA and ROE) strengthens support for H1a, indicating that the finding is robust to alternative profitability measurements. On the moderation side, the linear interaction coefficient ($\beta_4 = -0.0372$) is not significant, whereas the quadratic interaction coefficient is significantly positive ($\beta_5 = 0.0223$; $p = 0.006$). The combination of a negative β_4 and a positive β_5 suggests a U-shaped pattern (rather than an inverted U-shaped pattern) in the moderation of the TAETR-ROE relationship, implying that the effectiveness of accrual-based tax avoidance is lowest at moderate levels of CFO compensation and increases (becomes less negative) at both low and high compensation levels. This opposite pattern is substantively consistent with the argument that a non-linear inverted U-shaped moderation effect is more clearly identified in the cash-tax management dimension directly under the CFO's operational control (the TACETR model), rather than in the accrual-based dimension, which is more heavily influenced by accounting policies and deferred tax strategies. Regarding the control variables, leverage is positively and significantly associated with ROE ($\beta = 0.2173$; $p < 0.01$), reflecting the leverage effect mechanism on ROE that does not appear in the ROA model. Firm size and growth are related to ROE in directions consistent with those observed in the main model.

TACETR-ROE Model Estimation Results

The TACETR-ROE model produces results that reinforce the main findings (see Table 11). The TACETR coefficient remains significantly positive with a larger magnitude ($\beta = 0.0482$; $p < 0.01$), confirming the consistency of the positive effect of cash-based tax avoidance on profitability. More importantly, the inverted U-shaped moderation pattern remains evident, as indicated by a significantly positive linear interaction coefficient ($\beta_4 = 0.0113$; $p = 0.022$) and a significantly negative quadratic interaction coefficient ($\beta_5 = -0.0061$; $p = 0.027$). The turning point of the TACETR-ROE model occurs at $\text{COMP_mc} = 0.9262$ or $\text{Ln}(\text{COMP}) = 8.2037$ (approximately IDR 3.64 billion in the original scale), which is very close to the turning point of the TACETR-ROA model ($\text{Ln COMP} = 8.0044$ or IDR 2.99 billion). The convergence of turning-point values across the ROA and ROE specifications provides strong evidence that the inverted U-shaped pattern represents a substantive empirical phenomenon rather than a methodological artifact. Regarding the control variables, leverage is again positively and significantly associated with ROE at the 1% level, consistent with the TAETR-ROE model and reflecting the leverage effect in earnings normalization relative to equity. Firm size is negatively associated with ROE at the 5% significance level, while growth is positively associated with ROE at the 1% significance level.

Synthesis of Robustness Checks

The results of the two types of robustness checks conducted in this study provide a systematic assessment of the strength of the findings. First, the measurement robustness check, which substituted the dependent variable from ROA to ROE, demonstrated that the differing directional effects of tax avoidance between TAETR (negative) and TACETR (positive) remained identifiable across both profitability specifications. Furthermore, the statistical significance of the main findings was preserved, and the inverted U-shaped nonlinear moderation pattern in the TACETR model was confirmed under both profitability specifications, with convergent turning points ($\text{Ln COMP} = 8.00$ in the ROA model and 8.20 in the ROE model). The consistency of the findings across profitability measures (ROA and ROE) provides strong support that the identified patterns are not artifacts of a particular measurement choice.

Second, the identification robustness check using lagged independent variables revealed a different pattern of support. The positive effect of TACETR on profitability remained significant after temporal separation, robustly confirming the main finding. In contrast, the negative effect of TAETR weakened to a conventionally insignificant level ($p = 0.108$), and the nonlinear moderating effect was not confirmed at all (joint test $p = 0.9887$). This attenuation suggests that some findings in the main model are contemporaneous in nature and therefore require caution in making causal claims.

The synthesis of these two types of robustness checks yields three categories of findings based on the strength of empirical support. The most robust finding is the positive effect of TACETR on profitability (H1b), which remained consistently supported across all specifications, namely the main model using ROA, the measurement robustness check using ROE, and the identification robustness check using lagged variables. The second category is the negative effect of TAETR on profitability (H1a), which was confirmed in the measurement robustness check but weakened in the identification robustness check, indicating the contemporaneous nature of this relationship, consistent with the characteristics of accrual-based ETR as a period-specific construct. The third category is the nonlinear moderating effect of CFO compensation (H2 and H3), which was confirmed in the measurement robustness check but not in the identification robustness check. Consequently, this finding should be positioned as an exploratory contemporaneous pattern that requires confirmation through more rigorous causal approaches in future research.

Interpretation of the Effect of Tax Avoidance on Profitability

The empirical findings indicating different directions of influence between TAETR (negative) and TACETR (positive) on profitability have substantial conceptual implications. The negative effect of TAETR on ROA suggests that accrual-based tax avoidance tends to be associated with strategies that generate greater implicit costs than the tax savings obtained. Aggressive accrual tax accounting maneuvers often require complex transaction structures, intensive deferred tax reporting, and greater exposure to audit risk. The direct consequences of this complexity include higher compliance costs, reputational exposure, and reduced financial reporting transparency, which may erode stakeholder confidence (Kovermann & Velte, 2019).

In contrast, the positive effect of TACETR on ROA indicates that efficient cash tax management contributes directly to profitability. Savings in cash tax payments increase operating cash flows that can be allocated to productive investments, working capital financing, or the reduction of external financing costs. Unlike ETR management, which is influenced by accounting policies and deferred taxes, CETR management is more closely related to operational decisions that directly affect corporate cash flows, as demonstrated by (Drake et al., 2020).

This difference in the direction of influence empirically reinforces the argument of (Siburian & Nisa, 2025) that tax avoidance is a multidimensional construct that cannot be adequately captured by a single proxy. The multi-proxy approach adopted in this study reveals substantive patterns that would be overlooked if only one measurement were used. The methodological implication of this finding is that future tax avoidance research should integrate ETR and CETR as complementary measures rather than substitutes. The opposite signs are best interpreted as reflecting two distinct managerial dimensions rather than mere measurement noise: ETR is shaped substantially by accounting policies, deferred-tax recognition, and regulatory adjustments that lie outside the CFO's direct discretion, whereas CETR captures the timing and magnitude of actual cash tax payments, which are more directly governed by operating decisions. This behavioral distinction documented in studies that explicitly compare the accrual and cash dimensions of effective tax rates (Sari & Chairunisa, 2025) explains why only the cash-based proxy interacts significantly with CFO compensation. At the same time, the divergence cannot be fully separated from the measurement properties of ETR as a period-specific construct, which is consistent with the attenuation of the TAETR effect once the variables are lagged; the two interpretations are thus complementary rather than mutually exclusive.

Interpretation of the Moderating Role of CFO Compensation

The finding that the moderating role of CFO compensation was significantly identified in the TACETR model but not in the TAETR model provides substantial insight into the mechanism through which executive incentives influence tax strategies. This pattern is consistent with the argument that cash tax payment policies are more directly under the operational control of CFOs than accrual tax policies, which involve more complex accounting decisions distributed across organizational functions (Tambunan et al., 2022). Compensation incentives attached to CFOs are naturally more effective in influencing immediate operational decisions related to tax cash flows. The confirmed inverted U-shaped pattern in the TACETR moderation relationship presents two mechanisms operating simultaneously but across different compensation intervals. At low to moderate compensation levels, increases in CFO compensation function as a mechanism for incentive alignment and as a driver of competitive performance, consistent with the

predictions of Agency Theory (Jensen & Meckling, 1976) and Tournament Theory (Lazear & Rosen, 1981). CFOs receiving proportional compensation are encouraged to optimize cash tax strategies that enhance profitability without undertaking excessive risk.

At high compensation levels exceeding the turning point of $\text{Ln COMP} = 8.00$ (approximately IDR 2.99 billion), the positive incentive effect begins to weaken and eventually declines. The mechanisms explaining this phenomenon include the emergence of the managerial power effect as described by (Gurusinga et al., 2024), whereby CFOs with very high compensation possess bargaining power that weakens the incentive function as an alignment mechanism. Furthermore, excessively high compensation may encourage excessive risk-taking, which increases the implicit costs of tax avoidance through a higher probability of tax disputes and reputational damage (Hidayat et al., 2023). The consistency of this pattern across profitability specifications (ROA and ROE) strengthens the credibility of this interpretation.

The location of the turning point at approximately $\text{Ln COMP} = 8.00$ has significant practical implications. Considering that the average CFO compensation in the sample is $\text{Ln } 7.2775$ (approximately IDR 1.45 billion), the majority of firms in the sample still operate within the range where increases in CFO compensation continue to strengthen the effectiveness of cash tax avoidance in enhancing profitability. Only firms with relatively high CFO compensation, particularly those in the upper percentiles of the sample, face the risk of diminishing returns from further compensation increases.

Theoretical Implications

The findings of this study provide significant theoretical contributions in several respects. The first contribution is the provision of empirical evidence that the relationship among tax avoidance, executive incentives, and profitability is not uniform but depends on the dimension used to measure tax avoidance and the level of compensation. This finding supports the contingency perspective in the corporate governance literature, where the effectiveness of governance mechanisms is strongly influenced by the specific configuration of incentives and strategic decisions.

Another relevant contribution is the extension of the corporate governance literature by focusing the analysis on CFOs as the primary decision-makers in tax management. Most previous studies have focused on CEOs (Velte, 2022), whereas the results of this study indicate that the role of CFOs in cash tax strategy decisions differs substantially from that of CEOs, whose focus is on long-term strategic direction. This finding is consistent with the study of (Alareeni & Hamdan, 2020), which demonstrates the dominance of CFOs over CEOs in financial reporting decisions and discretionary accruals.

Another conceptual contribution is the confirmation of a non-linear inverted U-shaped moderation pattern within the context of an emerging market. This finding extends the generalizability of the pattern previously identified by (Cahyadi & Tjahjono, 2025; Emilda & Veronica, 2022) in the United States market to the Indonesian context, while also demonstrating that the pattern is cross-jurisdictional. The integration of Agency Theory, Tournament Theory, and the Risk Management perspective, as employed in this study, provides a comprehensive explanatory framework for the phenomenon of non-linear moderation, which has previously tended to be explained only partially by individual theoretical perspectives.

Practical Implications

For companies and boards of commissioners, these findings suggest that the relationship between CFO compensation and the effectiveness of cash tax strategies is not necessarily linear, so that continually increasing incentives may not yield proportional benefits. The inverted U-shape

Table 12. Robustness Check: Lagged Independent Variables (Fixed Effects Model)

Variables	Model (1) TAETR(t-1)	Model (2) TACETR(t-1)
	b/(SE)	b/(SE)
TAETR (t-1)	-0.0484 (0.0299)	
TACETR (t-1)		0.0072** (0.0032)
COMP_mc (t-1)	0.0076 (0.0085)	0.0042 (0.0074)
COMP_mc ² (t-1)	0.0011 (0.0010)	0.0011 (0.0013)
TAETR(t-1) × COMP_mc(t-1)	-0.0210 (0.0147)	
TAETR(t-1) × COMP_mc ² (t-1)	0.0083 (0.0061)	
TACETR(t-1) × COMP_mc(t-1)		0.0002 (0.0019)
TACETR(t-1) × COMP_mc ² (t-1)		-0.0001 (0.0013)
Firmsize	-0.0364** (0.0149)	-0.0347** (0.0158)
Lev	0.0031 (0.0413)	0.0018 (0.0418)
Growth	0.0117** (0.0055)	0.0121** (0.0055)
Capint	0.0400 (0.0565)	0.0381 (0.0563)
Liquid	0.0884** (0.0442)	0.0715* (0.0398)
Constant	0.5717*** (0.1996)	0.5402** (0.2146)
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Clustered SE (firm)	Yes	Yes
Joint Interaction Test	F(2, 97) = 1.03 (p = 0.3622)	F(2, 97) = 0.01 (p = 0.9887)
Model F-statistic	F(13, 97) = 2.38 (p = 0.0082)	F(13, 97) = 2.51 (p = 0.0052)
R ² Within	0.1487	0.1162
R ² Between	0.0001	0.0002
R ² Overall	0.0022	0.0004
ou (sigma _u)	0.0874	0.0848
σ _e (sigma _e)	0.0375	0.0382
ρ (rho)	0.8446	0.8309
corr(ui, Xb)	-0.7300	-0.7117
Observations	383	383
Firms	98	98
Period	2021–2024	2021–2024

Source: Processed data, 2026. Clustered robust SE by firm are reported in parentheses. Year fixed effects are included but coefficients are not reported for brevity. The family firm variable cannot be estimated because it is time-invariant and absorbed by firm fixed effects. The value of ρ indicates the proportion of variance explained by between-firm heterogeneity. $p < 0.10$; $p < 0.05$; $p < 0.01$.

implies a compensation range in which incentive effectiveness tends to weaken. Because the location of the inflection point depends on model specification and sample composition, this study does not recommend any single compensation figure as an optimal target, and the turning-point estimate should not be treated as a rigid benchmark. The implication that can be drawn is qualitative: remuneration committees should remain alert to potential diminishing returns at very high compensation levels rather than

anchoring policy to the estimated Rupiah value.

For investors and capital market analysts, the differing directions of influence between TAETR and TACETR on profitability provide an important evaluative signal. A significant reduction in ETR without a corresponding consistent reduction in CETR may indicate risky tax accounting strategies, whereas a reduction in CETR accompanied by sound operational management reflects substantive tax efficiency. This distinction is relevant in fundamental corporate analysis and earnings quality assessment.

For regulators and tax authorities, these findings underscore the importance of monitoring accrual-based tax avoidance practices that may erode the tax base without generating positive contributions to corporate performance. A supervisory approach that more specifically targets aggressive accrual tax management behavior may be more effective than a broad-based approach that could hinder legitimate cash tax management practices.

Robustness Check: Lagged Independent Variables Using the Fixed Effects Model

The robustness analysis using lagged independent variables and the Fixed Effects Model provides mixed evidence regarding the persistence of tax avoidance effects on firm profitability (see Table 12). In Model (1), the negative association between lagged TAETR and profitability becomes statistically insignificant, suggesting that the previously observed effect may be partially influenced by firm-specific characteristics, contemporaneous adjustments, or reduced statistical power after temporal separation. In contrast, Model (2) demonstrates that lagged TACETR remains positively and significantly associated with profitability, indicating that cash-based tax planning generates benefits that persist over time. The contrast between the two proxies supports the argument that TAETR primarily reflects short-term reporting choices, whereas TACETR captures more sustainable operational tax management practices. Furthermore, the joint interaction tests reveal that CFO compensation does not significantly moderate the relationship between either tax avoidance measure and profitability, confirming the absence of a moderating effect in the robustness specification.

The robustness analysis using lagged independent variables and the Fixed Effects Model demonstrates that the positive impact of TACETR on profitability remains stable over time, thereby providing strong support for H1b. The marginal effects are nearly identical across all CFO compensation percentiles, indicating that CFO compensation does not materially alter the relationship between cash tax avoidance and firm profitability (see Table 13). This conclusion is reinforced by the highly insignificant joint test and the statistically meaningless turning point estimate, both of which reject the existence of a robust non-linear moderating effect. Furthermore, the consistency of the control variables' coefficients across specifications confirms the overall reliability of the model and suggests that the weakening significance of certain primary variables is not attributable to model misspecification. Overall, the findings indicate that while the positive profitability effect of cash tax savings is temporally robust, the non-linear moderating role of CFO compensation observed in the main model should be interpreted as an exploratory contemporaneous association requiring further validation through more advanced causal approaches such as dynamic panel GMM.

Research Limitations and Future Research

This study is subject to several limitations that should be weighed when interpreting the results. First, and most central to the contribution, the design is observational and therefore cannot fully rule out endogeneity. Reverse causality is a particular concern for the compensation channel, because

Table 13. Marginal Effect of TACETR($t-1$) on ROA Across Different Levels of CFO Compensation

Percentile	COMP_mc ($t-1$)	Marginal Effect	Std. Error	p-value	Significant?
P10	-1.7842	0.0065	0.0048	0.176	No
P25	-1.0728	0.0069	0.0034	0.048	Yes (**)
P50	-0.0887	0.0072	0.0032	0.028	Yes (**)
P75	0.9409	0.0073	0.0031	0.020	Yes (**)
P90	1.5716	0.0073	0.0040	0.071	Marginal (*)

Source: Processed data, 2026.

more profitable firms may simultaneously award higher CFO compensation, so that the estimated moderation could partly reflect performance driving pay rather than pay shaping the effectiveness of tax management. The lagged-variable specification mitigates contemporaneous reverse causality but does not eliminate it: as (Bellemare, 2000) note, lagged regressors only consistently address reverse causality when the unobserved heterogeneity is not serially correlated. The non-linear moderation does not survive the lagged specification, which is precisely why it is positioned as a contemporaneous, exploratory association rather than a causal effect. Stronger identification through instrumental variables, difference-in-differences around exogenous changes in remuneration or tax policy, or dynamic-panel GMM (Chen et al., 2024; Jadoon et al., 2021) is therefore recommended, although GMM requires a longer panel than the five-year window available here.

Second, the sample is restricted to firms that disclose executive compensation, which may introduce selection bias toward firms with stronger governance and higher transparency; the findings are thus more representative of that subset than of all listed Indonesian firms. Third, where individualized CFO pay is unavailable, aggregate board-level compensation is used as a proxy, which adds measurement noise to the moderating variable and may attenuate the detection of true moderation. Fourth, the study uses total monetary compensation without distinguishing fixed from variable, or cash from equity-based, components, limiting analytical granularity. Fifth, the 2020–2024 window spans the COVID-19 pandemic and its recovery; although year fixed effects absorb common temporal shocks, sectoral heterogeneity in pandemic responses may not be fully captured. Sixth, the turning point is a ratio of two estimated coefficients and is consequently imprecise, as reflected in the wide bootstrap interval, so its Rupiah equivalent should be read only as an order-of-magnitude illustration.

These limitations point to several avenues for future research. Methodologically, future studies should pursue the causal-identification strategies noted above and exploit longer panels to enable dynamic-panel estimation. The construct of tax avoidance could be broadened beyond ETR and CETR to include book-tax differences and their discretionary and permanent components, capturing a wider spectrum of tax behavior. The moderation framework could be enriched by separating compensation into fixed, cash-bonus, and equity-based components, and by incorporating CFO characteristics such as tenure, education, gender, and age, which aggregate pay cannot reveal. Cross-industry subgroup analysis and cross-country comparisons among ASEAN or other emerging markets would help establish how institutional features tax-enforcement intensity, disclosure norms, and executive labor markets condition the relationship. Finally, additional governance moderators such as board independence, audit-committee quality, and institutional ownership could clarify how CFO incentives interact with broader governance mechanisms in shaping the profitability consequences of tax strategy.

Conclusion

Based on the research that has been conducted, it can be concluded that tax avoidance significantly affects the profitability of publicly listed non-financial companies in Indonesia, although the direction and magnitude of the effect depend on the measurement proxy employed. Accrual-based tax avoidance (TAETR) was found to have a negative association with profitability, indicating that more aggressive accrual tax avoidance practices may generate implicit costs that outweigh their benefits. In contrast, cash-based tax avoidance (TACETR) demonstrated a positive and robust effect on profitability, suggesting that efficient tax cash-flow management enhances firm performance through tax savings that can be allocated to operational and investment activities. These findings remained consistent when profitability was measured using both ROA and ROE. Furthermore, robustness testing with lagged independent variables confirmed the temporal persistence of the positive TACETR–profitability relationship, while the negative effect of TAETR weakened and became statistically insignificant, indicating that its impact is more period-specific and potentially influenced by simultaneity or firm-specific characteristics.

The study also demonstrates that CFO compensation moderates the relationship between tax avoidance and profitability, although the moderating effect is evident only for cash-based tax avoidance. The results reveal a significant non-linear inverted U-shaped moderation pattern, whereby increases in CFO compensation strengthen the positive effect of TACETR on profitability up to an optimal compensation level, after which the effect gradually declines. This finding supports the incentive-alignment mechanism proposed by Agency Theory and the competitive incentives suggested by Tournament Theory, while also indicating the potential emergence of managerial power and excessive risk-taking beyond the optimal threshold. However, the non-linear moderation effect was not replicated in the lagged robustness specification, suggesting that the relationship may be predominantly contemporaneous rather than temporally persistent. Overall, the study provides empirical evidence that the interplay among tax avoidance, executive financial incentives, and profitability is multidimensional and highly sensitive to the choice of measurement proxies, highlighting the importance of employing multiple tax avoidance measures to obtain a more comprehensive understanding of corporate tax behavior and its performance implications.

Returning to the three objectives, the study answers each in turn: tax avoidance does affect profitability, but its sign is proxy-dependent; CFO compensation moderates that relationship only in the cash-based dimension; and that moderation takes an inverted U-shape that is statistically identified in the contemporaneous models but does not persist once the variables are lagged. The contribution is therefore best framed as extending the executive-compensation and tax-avoidance literature rather than overturning it by jointly applying a multi-proxy design, operating profitability, and a CFO-focused non-linear moderation in an emerging-market context. Consistent with the observational design, all results are stated as associations rather than causal effects, and the policy and managerial implications are intended to be proportional to this

level of evidence: they highlight the value of monitoring both accrual and cash dimensions of tax behavior and of remaining

alert to diminishing incentive returns, without prescribing a specific optimal level of CFO compensation.

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