



The Influence of Firm Size, Leverage, and Sales Growth on Property Sector Companies Listed on the Indonesia Stock Exchange during 2022–2024



***Sylvia Chatarina Lee¹, Latersia Br. Gurusinga², Juliandi Sahputra³**

^{1,2,3}Accounting Study Program, STMB Multi Smart Medan, Medan, Indonesia

Email correspondence: sylviachatarina104@gmail.com

Article Info	Abstract
Article History Submission: 2026-05-30 Accepted: 2026-10-19 Published: 2026-10-21	<p>Corporate tax aggressiveness remains an important issue because firms may differ in how their financial and organizational characteristics relate to the effective tax burden they report. This study examined the relationships of firm size, leverage, and sales growth with tax aggressiveness among property and real estate companies listed on the Indonesia Stock Exchange during 2022–2024. Tax aggressiveness was proxied by the effective tax rate (ETR), with higher ETR values indicating lower tax aggressiveness. The analysis was based on 57 firm-year observations from 19 companies and employed multiple linear regression following descriptive analysis and regression assumption testing. Because the initial model exhibited non-normal residuals, ETR and sales growth were transformed before the final model was estimated. The results showed that firm size was positively and significantly associated with ETR ($B = .076$, $p = .018$), indicating that larger firms tended to exhibit lower tax aggressiveness under the ETR-based operationalization. In contrast, leverage ($B = .136$, $p = .878$) and sales growth ($B = -.083$, $p = .874$) were not significantly associated with ETR. The overall regression model was statistically significant, $F(3, 53) = 2.807$, $p = .048$, but demonstrated limited explanatory capacity (adjusted $R^2 = .088$). These findings indicate that firm size was the only corporate characteristic examined that showed a significant partial relationship with the tax aggressiveness proxy. However, the results should be interpreted cautiously because heteroskedasticity and positive autocorrelation remained in the transformed model. The study highlights the importance of considering both the direction of ETR-based measurement and model diagnostics when interpreting empirical evidence on corporate tax aggressiveness.</p>
Keywords: Effective Tax Rate; Firm Size; Leverage; Sales Growth; Tax Aggressiveness.	

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I. INTRODUCTION

Taxation represents a major source of government revenue and plays an essential role in financing public administration and national development. Under Indonesian taxation law, taxes constitute mandatory contributions imposed on individuals and entities and are used to finance public needs and promote societal welfare. For corporations, fulfilling tax obligations is therefore an important component of regulatory compliance and economic responsibility. At the same time, taxation represents a financial consideration because tax payments affect after-tax earnings and may consequently become part of corporate financial and tax-related decision-making (Andhari & Sukartha, 2017). Understanding how corporate characteristics are associated with reported tax burdens is therefore relevant to both corporate decision-making and the broader examination of tax compliance behavior.

Corporate efforts to manage tax liabilities can take different forms and should not be treated as conceptually equivalent. Tax planning generally involves arranging transactions and business decisions to manage tax obligations efficiently within applicable regulations, whereas tax avoidance involves reducing tax liabilities by utilizing provisions or gaps within the tax system. Tax evasion, in contrast, involves unlawful practices such as concealing income or providing false information. Within empirical taxation research, tax aggressiveness broadly describes corporate efforts

to reduce tax burdens through relatively aggressive tax positions, although such behavior does not necessarily imply illegal activity (Hanlon & Heitzman, 2010). In the present study, tax aggressiveness is operationalized using the effective tax rate (ETR). Because ETR is used as an inverse proxy, lower ETR values indicate greater tax aggressiveness, whereas higher values indicate lower tax aggressiveness. Accordingly, ETR should be interpreted as an empirical proxy rather than direct evidence of unlawful tax avoidance or tax evasion.

The property and real estate sector provides a particularly relevant context for examining corporate tax behavior. Companies in this sector are generally capital intensive, hold substantial long-term assets, and operate through project-development and revenue-recognition cycles that may vary considerably across firms. The sector also operates within specific taxation arrangements. In Indonesia, certain income derived from the transfer of rights to land and/or buildings is subject to final income tax under Government Regulation No. 34 of 2016. Such characteristics mean that the tax burden reported by property and real estate companies needs to be interpreted in relation to both their business activities and the applicable tax framework. The 2022–2024 period provides an additional empirical context because these companies operated during the post-pandemic recovery period, alongside changes in market demand, development costs, financing conditions, and interest rates.

Preliminary observations further indicate substantial variation in ETR and corporate characteristics within the sector. During 2022–2024, the ETR of PT Metropolitan Land Tbk (MTLA) ranged from .004 to .013, PT Ciputra Development Tbk (CTRA) from .024 to .026, and PT Bumi Serpong Damai Tbk (BSDE) from .002 to .006. These values were below the general corporate income tax rate of 22% applicable during the observation period. However, low ETR values cannot independently establish the existence of tax-aggressive practices because effective tax burdens may also reflect differences in income composition, transaction characteristics, and applicable tax treatments. During the same period, the total assets of these companies increased, while their financing and sales patterns also varied. For example, the debt-to-asset ratio of MTLA declined from .294 to .248 and that of CTRA from .500 to .477, while MTLA recorded positive sales growth throughout the period. These variations provide an empirical basis for examining whether firm size, leverage, and sales growth are associated with ETR as the operational proxy for tax aggressiveness.

Several theoretical perspectives provide competing explanations for the relationship between corporate characteristics and tax behavior. Agency Theory emphasizes contractual relationships between shareholders as principals and managers as agents, including potential conflicts of interest and information asymmetry that may influence managerial decisions concerning corporate resources and tax obligations (Jensen & Meckling, 1976). Political Cost Theory suggests that larger and more visible firms may face greater public and regulatory scrutiny and consequently higher political costs (Watts & Zimmerman, 1986). Legitimacy Theory similarly emphasizes the importance of maintaining organizational actions that are consistent with social and institutional expectations (Chariri & Ghazali, 2007). Together, these perspectives suggest that corporate characteristics may be associated with tax aggressiveness through different mechanisms and that the direction of these relationships cannot necessarily be assumed to be uniform across firms and contexts.

Firm size represents one corporate characteristic that may be particularly relevant to tax behavior. In this study, firm size is measured using the natural logarithm of total assets (Honggo & Marlinah, 2019). From an agency perspective, larger firms may have more complex transactions and greater resources with which to manage their tax obligations (Dharma & Ardiana, 2016; Fahrani et al., 2018). Conversely, Political Cost Theory and Legitimacy Theory suggest that larger firms may experience greater public and institutional scrutiny, potentially creating stronger incentives to maintain compliance and protect organizational legitimacy. Previous empirical findings reflect these competing arguments. Fahrani et al. (2018) reported a positive relationship between firm size and tax aggressiveness, whereas Prameswari (2017) found no significant relationship. More recent evidence from the property sector is similarly mixed, with Jayanto (2025) reporting a negative relationship and Afantika and Anisa (2025) finding no significant partial relationship. These differences indicate that the relationship between firm size and tax aggressiveness

remains empirically unsettled and may also depend on how tax aggressiveness is operationalized.

Leverage represents the financing structure of a firm and is measured in this study using the debt-to-asset ratio (DAR), which reflects the proportion of assets financed through debt (Wirdayanti et al., 2022). Debt financing may be relevant to corporate taxation because interest expenses can, subject to applicable tax regulations, affect taxable income. From an agency perspective, financing decisions also represent managerial choices concerning the allocation and use of corporate resources (Dharma & Ardiana, 2016). Nevertheless, the relationship between leverage and ETR may vary depending on debt composition, interest-bearing obligations, income structure, and applicable tax provisions. Previous empirical evidence remains inconsistent. Dharma and Ardiana (2016) reported a significant positive relationship, whereas Zulkifli (2022) found no significant relationship. Such inconsistencies indicate the need to reassess the relationship within the specific characteristics of property and real estate companies.

Sales growth captures changes in a company's sales from one period to another and reflects changes in business activity and market demand (Kurniati & Yuliana, 2022; Hidayat, 2018). Higher sales may contribute to higher revenue and potentially higher profits, but changes in tax liabilities depend on taxable income rather than sales alone. Increased sales can occur simultaneously with changes in project development costs, marketing expenditures, operating expenses, and the composition of taxable income. The relationship may be particularly complex in the property sector because certain transactions are subject to specific tax treatments. Empirical evidence is again inconclusive: Honggo and Marlinah (2019) reported a significant positive relationship between sales growth and tax aggressiveness, whereas Tanjaya and Nazir (2021) found no significant relationship. Thus, sales growth cannot be assumed to correspond directly to higher or lower tax aggressiveness without empirical examination.

Taken together, the existing literature reveals several research gaps. First, empirical findings regarding the relationships of firm size, leverage, and sales growth with tax aggressiveness remain inconsistent, with studies reporting positive, negative, or nonsignificant relationships. Second, a substantial portion of previous evidence has been obtained from sectors other than property and real estate, limiting its direct applicability to a sector characterized by substantial long-term assets, project-based business activities, and specific taxation arrangements. Third, the 2022–2024 period provides a distinct empirical setting in which property and real estate companies operated during post-pandemic economic recovery. These considerations warrant a sector-specific examination of the three corporate characteristics within the same empirical model.

This study addresses these gaps by examining firm size, leverage, and sales growth in relation to tax aggressiveness among property and real estate companies listed on the Indonesia Stock Exchange during 2022–2024. The study contributes context-specific evidence by simultaneously considering three dimensions of corporate characteristics—operational

scale, financing structure, and sales development—while explicitly accounting for the inverse interpretation of ETR as the proxy for tax aggressiveness. Agency Theory, Political Cost Theory, and Legitimacy Theory provide complementary perspectives for interpreting the relationships, particularly because the theoretical arguments do not necessarily predict a uniform direction across the three corporate characteristics. The study therefore aims to examine the relationships of firm size, leverage, and sales growth with ETR both individually and collectively within the property and real estate sector.

Given the competing theoretical arguments and mixed empirical evidence, the hypotheses are formulated in non-directional terms.

H1: Firm size is significantly associated with the effective tax rate (ETR) of property and real estate companies listed on the Indonesia Stock Exchange during 2022–2024.

H2: Leverage is significantly associated with the ETR of property and real estate companies listed on the Indonesia Stock Exchange during 2022–2024.

H3: Sales growth is significantly associated with the ETR of property and real estate companies listed on the Indonesia Stock Exchange during 2022–2024.

H4: Firm size, leverage, and sales growth are jointly significantly associated with the ETR of property and real estate companies listed on the Indonesia Stock Exchange during 2022–2024.

II. METHOD

This study employed a quantitative associative design to examine the relationships of firm size, leverage, and sales growth with tax aggressiveness. The study used secondary data obtained from the annual financial statements of property and real estate companies listed on the Indonesia Stock Exchange (IDX) during 2022–2024. The initial population consisted of 36 companies. The sample was selected using purposive sampling based on three criteria: the company was listed on the IDX, published complete annual financial statements throughout the observation period, and reported positive earnings in each year of observation. Two companies were excluded because of incomplete financial statements, while 15 companies did not meet the profitability criterion. The final sample therefore comprised 19 companies, yielding 57 firm-year observations over the three-year period.

Data were collected through documentation of the companies' annual financial statements, from which the information required to calculate each research variable was extracted. Firm size was measured as the natural logarithm of total assets. Leverage was measured using the debt-to-asset ratio (DAR), calculated as total debt divided by total assets. Sales growth was calculated as the change in annual sales relative to sales in the preceding year. Tax aggressiveness was proxied by the effective tax rate (ETR), calculated as income tax expense divided by income before tax. Because ETR was treated as an inverse proxy for tax aggressiveness, lower ETR values were interpreted as indicating greater tax aggressiveness, whereas higher ETR values indicated lower tax aggressiveness. This interpretation was made with consideration of differences in income

characteristics and applicable tax treatments and therefore did not treat a low ETR as direct evidence of unlawful tax behavior.

Data analysis was performed using descriptive statistics and multiple linear regression in SPSS version 22. Because the dataset consisted of repeated observations of 19 companies over three years, it had a panel structure. However, the observations were analyzed using pooled ordinary least squares (pooled OLS), without explicitly modeling firm-specific effects. Regression assumptions were evaluated before interpreting the estimated model. Residual normality was assessed using the Kolmogorov–Smirnov test, multicollinearity using tolerance and variance inflation factor (VIF) values, heteroskedasticity using residual scatterplots and the Glejser test, and autocorrelation using the Durbin–Watson statistic. Partial relationships were evaluated using *t*-tests, while the overall significance of the regression model was assessed using the *F*-test. The coefficient of determination was evaluated using R^2 and adjusted R^2 , with statistical significance determined at the 5% level.

The initial regression model exhibited a significant departure from residual normality. Consequently, the dependent variable and sales growth were transformed using the natural logarithm. The dependent variable was transformed as $(Y' = \ln(ETR + 0.01))$, whereas sales growth was transformed as $(X_3' = \ln(PP + 2))$, where (PP) denotes sales growth. The constants were added to permit transformation of ETR values approaching zero and negative sales growth values within the observed data range. Firm size remained expressed as the natural logarithm of total assets, while leverage remained represented by DAR. The transformed specification was subsequently used for the final multiple regression analysis and hypothesis testing. Because transformation does not necessarily resolve all regression assumption violations, the results of the heteroskedasticity and autocorrelation assessments were retained and considered when interpreting the regression estimates.

III. RESULTS AND DISCUSSION

A. Results

The analysis was based on 57 firm-year observations from 19 property and real estate companies listed on the Indonesia Stock Exchange during the 2022–2024 period. The analytical procedures included descriptive statistics, regression assumption testing, multiple linear regression, partial and overall model significance testing, and evaluation of the coefficient of determination. Because the residuals of the initial model did not satisfy the normality assumption, the transformed model was used for subsequent regression analysis and hypothesis testing. In the transformed model, $\ln(ETR + 0.01)$ was specified as the dependent variable, $\ln(\text{Sales Growth} + 2)$ was used as the transformed sales growth variable, while firm size and leverage remained in their original analytical forms.

1. Descriptive Statistics

Descriptive statistics were examined to provide an overview of the characteristics and

distribution of the variables before transformation. The analysis included firm size, leverage, sales growth, and the effective tax rate (ETR) as the proxy for tax aggressiveness. The minimum, maximum, mean, and standard deviation of each variable are presented in Table 1.

Table 1. Descriptive Statistics of the Research Variables

Variable	N	Min	Max	Mean	SD
Firm Size	57	15.722	31.962	25.995	4.366
Leverage	57	0.107	0.620	0.377	0.153
Sales Growth	57	-0.908	4.565	0.183	0.740
ETR	57	0.000	0.758	0.128	0.197

Firm size had a mean of 25.995 and a standard deviation of 4.366, while leverage had a mean of 0.377 and a standard deviation of 0.153. Sales growth exhibited considerable variation across observations, ranging from -0.908 to 4.565, with a mean of 0.183 and a standard deviation of 0.740. ETR ranged from 0.000 to 0.758, with a mean of 0.128 and a standard deviation of 0.197. These descriptive statistics characterize the distribution of ETR as the operational proxy for tax aggressiveness and should not, by themselves, be interpreted as direct evidence of tax-aggressive behavior.

2. Regression Assumption Testing

Before interpreting the regression estimates, the model was evaluated for residual normality, multicollinearity, heteroskedasticity, and autocorrelation. The initial model exhibited a significant departure from residual normality, which prompted transformation of ETR and sales growth. The transformed model was subsequently used for the main regression analysis, while the remaining assumptions were evaluated to determine the conditions under which the regression estimates should be interpreted.

a. Residual Normality

Residual normality was evaluated using the Kolmogorov-Smirnov test. In the initial model, the Kolmogorov-Smirnov statistic was .202 with $p < .001$, indicating a statistically significant departure from normality. ETR was subsequently transformed into $\ln(\text{ETR} + 0.01)$, while sales growth was transformed into $\ln(\text{Sales Growth} + 2)$. The constants were added to accommodate ETR values approaching zero and negative sales growth values within the observed data range.

Table 2. Residual Normality Test

Model	K-S Statistic	p	Interpretation
Before transformation	.202	< .001	Significant departure from normality
After transformation	.082	.200	No significant evidence of departure from normality

Following transformation, the Kolmogorov-Smirnov statistic decreased to .082 with $p = .200$. The result indicates that there was insufficient statistical evidence to conclude that the residuals of the transformed model deviated significantly from a normal distribution. The transformed model was therefore retained for subsequent regression analysis.

b. Multicollinearity

Multicollinearity was assessed in the transformed model using tolerance and Variance Inflation Factor (VIF) values. Tolerance values above .10 and VIF values below 10 were used as the criteria for identifying the absence of problematic multicollinearity.

Table 3. Multicollinearity Assessment of the Transformed Model

Predictor	Tolerance	VIF
Firm Size	.994	1.006
Leverage	.990	1.010
$\ln(\text{Sales Growth} + 2)$	.995	1.005

The tolerance values ranged from .990 to .995, while the VIF values ranged from 1.005 to 1.010. All values were well within the specified thresholds, indicating no evidence of problematic multicollinearity among the predictors in the transformed regression model.

c. Heteroskedasticity

Heteroskedasticity was evaluated using residual scatterplots and the Glejser test. In the initial model, the scatterplot indicated that the residuals were not distributed entirely randomly around the zero line, suggesting an uneven variance pattern. Following transformation, the residuals appeared more dispersed and showed a less pronounced pattern, indicating an improvement in their visual distribution. However, because visual assessment alone was insufficient to determine whether heteroskedasticity remained, the Glejser test was also performed to provide statistical confirmation. Figures 1 and 2 illustrate the residual patterns before and after transformation, respectively.

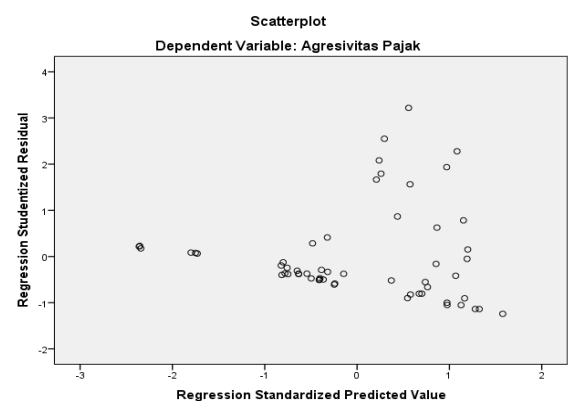


Figure 1. Residual Scatterplot Before Transformation

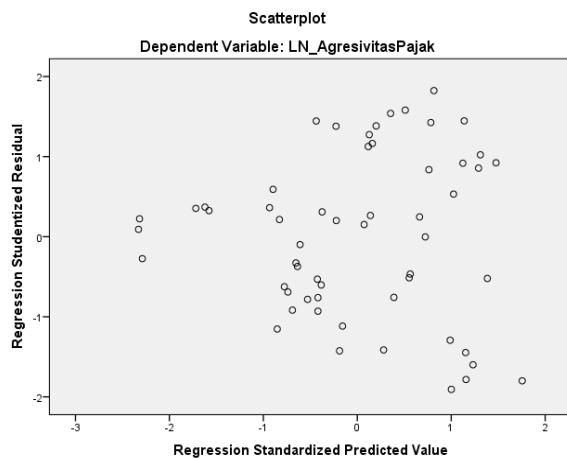


Figure 2. Residual Scatterplot After Transformation

Although the scatterplot of the transformed model showed a visually more random distribution of residuals, the Glejser test provided additional statistical evidence regarding heteroskedasticity. The results for the transformed model are presented in Table 4.

Table 4. Glejser Test for the Transformed Model

Predictor	B	SE	β	t	p
Constant	-1.126	.447	—	-2.520	.015
Firm Size	.068	.014	.528	4.688	< .001
Leverage	.709	.411	.195	1.725	.090
Ln(Sales Growth + 2)	-.008	.243	-.003	-.031	.975

Firm size remained statistically significant in the Glejser test ($p < .001$), whereas leverage ($p = .090$) and transformed sales growth ($p = .975$) were not significant. Thus, despite the visually improved residual pattern after transformation, the statistical test continued to indicate heteroskedasticity associated with firm size. The homoskedasticity assumption was therefore not fully satisfied in the transformed model.

d. Autocorrelation

Autocorrelation was assessed using the Durbin-Watson statistic because the dataset contained repeated observations of the same 19 companies over the 2022–2024 period. The initial model produced a Durbin-Watson value of 1.197. Following transformation, the value decreased to .997. Based on the lower bound used in the analysis ($dL = 1.4637$; $n = 57$; $k = 3$), the Durbin-Watson statistic for the transformed model remained below the lower bound. The result therefore indicated that positive residual autocorrelation remained present after transformation.

3. Multiple Linear Regression and Hypothesis Testing

Multiple linear regression was performed using the transformed model, with $\ln(ETR + 0.01)$ as the dependent variable. Firm size and leverage were retained in their original analytical forms, while sales growth was

represented by $\ln(\text{Sales Growth} + 2)$. The coefficient estimates, standardized coefficients, and corresponding significance tests were used simultaneously to evaluate the partial hypotheses, thereby avoiding a redundant separate presentation of the t -test results.

The estimated regression equation was:
 $\ln(ETR + 0.01) = -5.040 + 0.076(\text{Firm Size}) + 0.136(\text{Leverage}) - 0.083\ln(\text{Sales Growth} + 2) + e$

Table 5. Multiple Linear Regression and Partial Hypothesis Testing

Predictor	B	SE	β	t	p	Decision
Constant	-5.040	.961	—	-5.244	< .001	—
Firm Size	.076	.031	.320	2.451	.018	H1 supported
Leverage	.136	.884	.020	.154	.878	H2 not supported
Ln(Sales Growth + 2)	-.083	.522	-.021	-.159	.874	H3 not supported

Firm size was positively and significantly associated with $\ln(ETR + 0.01)$ ($B = .076$, $\beta = .320$, $t = 2.451$, $p = .018$), providing statistical support for H1. The positive coefficient indicates that larger firms were associated with higher ETR values after leverage and sales growth were statistically controlled. Because ETR functions as an inverse proxy for tax aggressiveness in this study, a higher ETR corresponds to lower tax aggressiveness. Accordingly, the result indicates that larger firm size was associated with lower tax aggressiveness under the operationalization adopted in this study.

Leverage had a positive but statistically nonsignificant coefficient ($B = .136$, $\beta = .020$, $t = .154$, $p = .878$); therefore, H2 was not supported. Transformed sales growth also showed no statistically significant relationship with ETR ($B = -.083$, $\beta = -.021$, $t = -.159$, $p = .874$), and H3 was consequently not supported. The data therefore provided no statistical evidence of partial relationships between either leverage or sales growth and ETR in the estimated model.

4. Overall Model Significance and Explanatory Power

The regression model was further evaluated in terms of its overall statistical significance and explanatory power. The overall F-test assessed whether the three predictors were jointly associated with the dependent variable, while R^2 and adjusted R^2 were used to evaluate the proportion of variance accounted for by the model.

The overall regression model was statistically significant, $F(3, 53) = 2.807$, $p = .048$, providing support for H4. This result indicates that firm size, leverage, and sales growth, when considered together within the regression model, were statistically associated with $\ln(ETR + 0.01)$. However, the probability value was close to the .05 significance threshold, and the partial results

showed that firm size was the only predictor with a statistically significant coefficient.

Table 6. Regression Model Summary

R	R ²	Adjusted R ²	Standard Error of the Estimate	Durbin-Watson
.370	.137	.088	1.089.863	.997

The R^2 value of .137 indicates that firm size, leverage, and sales growth collectively accounted for 13.7% of the variance in $\ln(\text{ETR} + 0.01)$. After adjustment for the number of predictors, the adjusted R^2 was .088, indicating limited explanatory capacity of the model. The remaining variance was not accounted for by the predictors included in the analysis, and the present study does not empirically identify which additional variables may account for that unexplained variation.

Overall, the results indicate that firm size was the only predictor with a statistically significant partial relationship with ETR, whereas leverage and sales growth were not significantly associated with ETR. Although the regression model reached overall statistical significance, its explanatory capacity was limited. Moreover, the Glejser and Durbin-Watson results indicated that heteroskedasticity and positive autocorrelation remained in the transformed model. Consequently, the estimated coefficients and inferential results should be interpreted cautiously in light of these unresolved regression assumption violations.

B. Discussion

1. Firm Size and Tax Aggressiveness

The results showed that firm size was positively and significantly associated with $\ln(\text{ETR} + 0.01)$ ($B = .076$, $p = .018$), providing statistical support for H1. The positive coefficient indicates that larger firms tended to have higher ETR values after leverage and sales growth were statistically controlled. Because ETR was operationalized as an inverse proxy for tax aggressiveness, a higher ETR corresponds to lower tax aggressiveness. Accordingly, the substantive interpretation of the result is that larger firm size was associated with lower tax aggressiveness among the property and real estate companies examined. The finding therefore does not support an interpretation that larger firms were more tax aggressive.

This relationship can be interpreted from the perspectives of Political Cost Theory and Legitimacy Theory. Larger firms generally have greater economic visibility and may attract greater attention from governments, tax authorities, investors, and the broader public, potentially creating stronger incentives to maintain regulatory compliance and organizational legitimacy (Watts & Zimmerman, 1986; Chariri & Ghazali, 2007). From this perspective, the positive relationship between firm size and ETR may reflect a tendency for larger firms to report relatively higher effective tax burdens. Nevertheless, this explanation should be regarded as a theoretical interpretation rather than a mechanism directly demonstrated by the present

study because regulatory scrutiny, corporate legitimacy, and tax-planning strategies were not directly measured.

The finding should also be interpreted in relation to the unresolved heteroskedasticity identified in the regression diagnostics. The Glejser test remained statistically significant for firm size after transformation, indicating that the variance of the residuals was associated with this predictor. Consequently, although the estimated coefficient for firm size reached conventional statistical significance, the inferential result warrants caution because the homoskedasticity assumption was not fully satisfied.

Comparison with previous studies also requires careful consideration of how tax aggressiveness was operationalized. Prior research has produced mixed findings, including positive relationships (Dharma & Ardiana, 2016; Fahrani et al., 2018), negative relationships (Jayanto, 2025), and statistically nonsignificant relationships (Prameswari, 2017; Ainniyya et al., 2021; Afantika & Anisa, 2025). In the present study, the positive coefficient refers specifically to ETR and therefore substantively indicates lower rather than higher tax aggressiveness. Differences across studies may reflect variations in sectoral characteristics, observation periods, sample composition, analytical specifications, and, importantly, the proxies used to operationalize tax aggressiveness.

2. Leverage and Tax Aggressiveness

Leverage was not significantly associated with $\ln(\text{ETR} + 0.01)$ ($B = .136$, $p = .878$), and H2 was therefore not supported. The result indicates that the data did not provide sufficient statistical evidence of a relationship between variations in the debt-to-asset ratio (DAR) and ETR among the property and real estate companies examined. Accordingly, neither a higher nor a lower level of tax aggressiveness can be statistically attributed to differences in leverage based on the estimated model.

From a conceptual perspective, debt financing can be relevant to corporate taxation because interest expenses may be deductible under applicable tax provisions. However, the leverage measure used in this study represents total debt relative to total assets and does not specifically capture interest-bearing debt or the amount of deductible interest expense. The absence of a significant relationship between DAR and ETR therefore should not be interpreted as evidence that debt financing has no relevance to corporate tax decisions. Rather, the specific leverage measure employed in the study did not demonstrate a statistically significant relationship with ETR during the observation period.

The finding is consistent with Sudibyo (2022) and Afantika and Anisa (2025), who likewise reported no significant relationship between leverage and tax aggressiveness. In contrast, Dharma and Ardiana (2016), Sulaeman (2021), and Zulkifli (2022) reported significant positive relationships. These differences indicate that the relationship between leverage and tax aggressiveness may vary across samples

and research settings. In the present study, interpretation is additionally constrained by the fact that interest expense and the tax treatment of specific debt components were not examined directly.

3. Sales Growth and Tax Aggressiveness

Transformed sales growth was not significantly associated with $\ln(\text{ETR} + 0.01)$ ($B = -.083$, $p = .874$), providing no statistical support for H3. This finding indicates that variations in sales growth were not statistically associated with ETR among the property and real estate companies examined during 2022–2024. Although the estimated coefficient was negative, its lack of statistical significance means that the direction should not be interpreted as reliable evidence of a substantive relationship with tax aggressiveness.

One possible explanation is that increases in sales do not necessarily translate proportionally into increases in taxable income. Higher revenues may occur alongside changes in project development costs, marketing expenditures, and other operating expenses, while corporate income tax is generally more directly related to taxable income than to gross sales. Consequently, changes in sales alone may not adequately represent changes in the tax base or incentives associated with corporate tax planning (Fajriah & Nursita, 2024). This explanation remains conceptual because the present study did not directly examine the components through which sales growth may translate into taxable income.

The taxation characteristics of the property sector also warrant consideration when interpreting the result. Certain income arising from transfers of rights to land and/or buildings may be subject to final income tax under Government Regulation No. 34 of 2016. Consequently, the relationship between sales growth and ETR may not necessarily operate in a straightforward manner within this sector. However, because the present study did not separate final and non-final income in calculating ETR, this tax treatment cannot be empirically established as the mechanism underlying the nonsignificant relationship and should only be regarded as a contextual explanation.

The finding is consistent with Sawitri et al. (2022), Fajriah and Nursita (2024), Fauji and Sadewa (2023), and Afantika and Anisa (2025), who also reported nonsignificant relationships between sales growth and tax aggressiveness. Conversely, Sudibyo (2022) and Honggo and Marlinah (2019) reported significant relationships. Such variation across studies may reflect differences in industry characteristics, observation periods, samples, model specifications, and the operationalization of tax-related outcomes.

4. Firm Size, Leverage, Sales Growth, and Tax Aggressiveness

When considered jointly, the regression model containing firm size, leverage, and sales growth was statistically significant, $F(3, 53) = 2.807$, $p = .048$, providing support for H4. The result indicates that the set of predictors, considered within the same

regression model, was statistically associated with $\ln(\text{ETR} + 0.01)$. However, this overall significance should not be interpreted as evidence that each predictor individually contributed a statistically significant relationship. The partial regression results showed that only firm size had a significant coefficient, whereas leverage and sales growth did not.

The explanatory capacity of the model was also limited. The model produced an R^2 of .137 and an adjusted R^2 of .088, indicating that the three predictors accounted for a relatively small proportion of the variation in $\ln(\text{ETR} + 0.01)$ after adjustment for the number of predictors. Most of the variation in the dependent variable therefore remained unaccounted for by the variables included in the model. The present study does not empirically identify which additional factors account for this unexplained variation; consequently, it would be inappropriate to attribute it to specific omitted variables without further analysis.

The overall model findings must also be interpreted in light of the regression diagnostics. Although transformation addressed the initial departure from residual normality and no problematic multicollinearity was identified, the Glejser test continued to indicate heteroskedasticity associated with firm size, while the Durbin–Watson statistic indicated positive autocorrelation. These unresolved violations are particularly relevant because the dataset consists of repeated observations of 19 companies across three years. Consequently, the conventional OLS significance tests may not fully account for the error structure present in the data, and the statistical evidence—especially the overall model significance at $p = .048$ —should be treated cautiously.

Taken together, the findings indicate that firm size was the only predictor with a statistically significant partial relationship with ETR in the estimated model, and its positive relationship with ETR substantively corresponds to lower tax aggressiveness. Leverage and sales growth did not demonstrate statistically significant partial relationships with ETR. The results therefore suggest that the three corporate characteristics examined do not contribute equally to explaining variation in the tax aggressiveness proxy within the property and real estate sector. At the same time, the limited explanatory power and unresolved heteroskedasticity and autocorrelation indicate that the findings should be viewed as context-specific evidence rather than definitive conclusions regarding the determinants of corporate tax aggressiveness.

IV. CONCLUSION

This study examined the relationships of firm size, leverage, and sales growth with tax aggressiveness, proxied by the effective tax rate (ETR), among property and real estate companies listed on the Indonesia Stock Exchange during 2022–2024. The findings indicate that firm size was positively and significantly associated with ETR, which, given the inverse interpretation of ETR as a proxy for tax aggressiveness,

suggests that larger firms tended to exhibit lower tax aggressiveness. In contrast, leverage and sales growth showed no statistically significant relationships with ETR. Although the regression model was statistically significant overall, its explanatory capacity was limited, indicating that a substantial proportion of variation in ETR was not accounted for by the three predictors examined. These findings highlight the importance of carefully considering the operationalization of tax aggressiveness when interpreting the direction of empirical relationships, particularly when ETR is used as an inverse proxy. The results should nevertheless be interpreted cautiously because heteroskedasticity and positive autocorrelation remained in the transformed model and the analysis was limited to 19 property and real estate companies over a three-year period. Future research should consider analytical approaches that better accommodate repeated firm-level observations and non-constant error variance, extend the observation period and sample coverage, and examine additional corporate characteristics to provide a more comprehensive understanding of variation in corporate tax aggressiveness.

CONFLICT OF INTEREST

The authors declare that they have no competing financial, professional, or personal interests that could have influenced the research, analysis, or interpretation of the findings reported in this article.

AUTHOR CONTRIBUTIONS

Sylvia Chatarina Lee contributed to the conceptualization of the study, data collection, data processing, statistical analysis, and preparation of the initial manuscript. **Latersia Br. Gurusinga** contributed to the development of the research methodology, interpretation of the findings, and critical revision of the manuscript. **Juliandi Sahputra** contributed to the theoretical development, validation of the analysis and interpretation, and review of the final manuscript. All authors reviewed and approved the final version of the manuscript.

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DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES

Generative artificial intelligence tools were used solely to assist with language refinement, proofreading, and improvement of the manuscript's academic readability. The research design, data collection, statistical analysis, interpretation of the findings, and scholarly conclusions were undertaken and verified by the authors. The authors take full responsibility for the content of the final manuscript.

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