Jurnal Multidisiplin Sahombu
Volume 5, Number 04, 2025, DOI 10.58471/jms.v5i04
ESSN 2809-8587 (Online)
https://ejournal.seaninstitute.or.id/index.php/JMS/index

The Effect of Earnings Management and Leverage on Tax Aggressiveness in Manufacturing Companies in the Industrial Sector Listed on the Indonesia Stock Exchange in 2020–2024

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Article Info

Keywords:
Earnings Management,
Leverage,
Tax Aggressiveness, Panel Data Regression, Agency Theory

ABSTRACT

This study aims to examine the effect of earnings management and leverage on tax aggressiveness in manufacturing companies listed on the Indonesia Stock Exchange during the 2020–2024 period. Tax aggressiveness has become a widespread practice, potentially harming state revenue, particularly when firms engage in tax planning strategies through earnings manipulation and debt structuring. The study employs a quantitative approach with panel data regression using purposive sampling of 35 manufacturing firms that consistently reported positive profits and complete financial statements. Tax aggressiveness is measured using the abnormal book-tax difference (AbBTD), while earnings management and leverage are treated as independent variables. The findings show that both earnings management and leverage have a positive and statistically significant effect on tax aggressiveness, both individually and jointly. These results support agency theory, suggesting that managers may act opportunistically to reduce tax burdens. The study recommends enhancing ethical financial reporting practices and strengthening regulatory oversight to minimize tax avoidance behavior.

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INTRODUCTION

In Indonesia, the phenomenon of tax aggressiveness has become increasingly prevalent. According to CNBC Indonesia, Minister of Finance Sri Mulyani reported a significant increase in the number of corporate taxpayers declaring losses in their annual tax returns (SPT), rising from 5,199 taxpayers during 2012–2016 to 9,496 taxpayers in the 2015–2019 period. Despite reporting fiscal losses, many corporations continued operating normally and even expanded their businesses. The implementation of the tax amnesty program further reflects the persistence of tax aggressiveness practices in the country.

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Indonesia's tax amnesty, launched on September 28, 2016, set a global record for the highest redemption payment, reaching IDR 81.1 trillion, surpassing Italy's 2009 record of approximately IDR 59 trillion (Tempo, 2016). The tax amnesty policy was introduced to recover unpaid taxes from underground economic activities and dishonest reporting. High participation in this program indicates a widespread acknowledgment among taxpayers of previous noncompliance in fulfilling tax obligations. One of the sectors where tax avoidance is most commonly observed is the mining industry. In its publication *Mine 2021: Great Expectations, Seizing Tomorrow*, PricewaterhouseCoopers (PwC) Indonesia estimated that only 30% of 40 major mining companies had adopted transparent tax reporting by 2020 (Bisnis, 2021).

These findings demonstrate that tax aggressiveness remains a significant issue in Indonesia—an alarming reality given the government's heavy reliance on tax revenues. Tax aggressiveness refers to corporate strategies aimed at minimizing tax liability, whether through legal means (tax avoidance) or illegal methods (tax evasion) (Frank et al., 2009). It encompasses a spectrum of tax planning activities, from fully legal to blatantly illegal (Laguir et al., 2015). Companies may engage in aggressive tax behavior through practices such as earnings management and the use of leverage.

Earnings management involves manipulating, concealing, or presenting financial information in ways that influence users' perceptions of a company's performance (Sri Sulityanto, 2008). According to the National Certified Fraud Association (2009), this practice misleads stakeholders by providing distorted financial facts, potentially resulting in misguided decisions.

Leverage, defined as the use of debt to finance company operations, can also serve as a mechanism for tax aggressiveness. According to Article 6(1)(a) of Law No. 36 of 2008 on Income Tax, interest expenses from debt can be deducted from taxable income. Consequently, companies with high leverage may reduce taxable income, indicating aggressive tax behavior. To mitigate this risk, the Directorate General of Taxes issued Circular No. 46 of 1995, limiting interest deductions to prevent unreasonable reductions in taxable income. Nonetheless, previous studies show inconsistent findings regarding the relationship between leverage and tax aggressiveness.

For instance, studies by Oktaviani et al. (2021) and Dewy (2018) on manufacturing firms found leverage to significantly influence tax aggressiveness, whereas Prasetyo and Wulandari (2021) found no such effect. Similarly, research conducted by Annisa et al. (2021) and Windaswari & Merkusiwati (2018) in the mining sector found no significant impact of leverage on tax aggressiveness. Annisa et al. (2021) concluded that debts in mining companies generally stem from shareholder loans or trade payables, which do not incur interest expenses and thus do not reduce profits.

Grace Johanna Leonardo (2024) found that earnings management positively influences tax aggressiveness, whereas leverage does not have a significant effect. However, collectively, earnings management, leverage, firm size, profitability, and capital intensity all significantly influence tax aggressiveness.

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Manufacturing companies listed on the Indonesia Stock Exchange consist of various autonomous industrial and commercial units, making them ideal subjects for comprehensive market capitalization research. The large number of manufacturing firms on the exchange, coupled with the frequent involvement of this sector in tax-related cases, makes it a relevant focus for investigation. Thus, this study aims to explore "The Effect of Earnings Management and Leverage on Tax Aggressiveness in Manufacturing Companies in the Industrial Sector Listed on the Indonesia Stock Exchange in 2020–2024."

METHODS

This study adopts a quantitative approach using numerical methods to objectively examine the relationship between two or more variables based on data collected directly from the field. This approach is considered more relevant than relying solely on expert opinions or researchers' subjective experiences, as it produces more factual and comprehensive information. The population in this research consists of all manufacturing companies listed on the Indonesia Stock Exchange (IDX), totaling 50 companies. Based on purposive sampling criteria, 35 companies were selected for analysis, as they had complete financial reports and reported positive profits during the 2020–2024 period.

Data collection techniques include literature review and documentation. The literature review was conducted to examine relevant theories and previous research findings from books and scholarly journals. Meanwhile, documentation was used to collect secondary data in the form of annual financial statements obtained from the official IDX website (www.idx.co.id). These data served as the main source for analysis and hypothesis testing.

The research instruments consisted of scholarly sources and corporate financial statements. The study used secondary data from the annual financial reports of manufacturing companies published between 2020 and 2024. The research objects include publicly listed companies on the IDX as of the end of 2024 that met the sample selection criteria based on data completeness and profitability.

The independent variables in this study are earnings management and leverage. Earnings management is understood as management's intervention in the preparation of financial statements to achieve personal benefits. The earnings management indicator refers to the profit distribution model, calculated as the difference between current year profit and previous year profit, divided by the previous year's market value of equity (MVE). The MVE is obtained from the year-end market capitalization of the company's shares.

Leverage, in this study, refers to the use of debt to finance corporate operations, which may also serve as a means for tax aggressiveness. Leverage is measured as the ratio of total debt to total equity. High leverage practices may indicate management's inclination to use interest expenses as a tax deduction, as stipulated in the Income Tax Law and Circular Letter No. 46 of 1995 issued by the Directorate General of Taxes.

The dependent variable in this study is tax aggressiveness, measured using the abnormal book-tax difference (AbBTD). The initial book-tax difference (BTD) is calculated as the difference between accounting income before tax and current tax expense, adjusted by

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the corporate tax rate. The AbBTD is then obtained as the residual value from an OLS regression of BTD on control variables, including changes in investment (ΔINVit), changes in revenue (ΔREVit), net operating loss (NOLit), and tax loss utilization (TLUit). All variables are scaled by total assets, and the resulting residual is used as the primary indicator of the firm's level of tax aggressiveness.

RESULTS AND DISCUSSION

Panel Data Regression Model Testing

The model employed in this study is a panel data analysis model to examine the model's interpretative power and the consistency of its underlying theoretical framework. Data processing was conducted electronically using Microsoft Excel 2010 and EViews 9. The panel regression model was chosen to test the model specification and assess the alignment between theoretical expectations and empirical realities.

Chow Test

The Chow Test is conducted to determine whether the appropriate model specification is the pooled least squares model or a model that allows for group-specific effects. This test is part of the early stage in panel data analysis to guide the selection of the appropriate estimation model. If the probability value is greater than 0.05, it indicates that the pooled least squares method is appropriate, and the null hypothesis (H_0) is accepted. However, if the probability value is less than 0.05, then H_0 is rejected and the alternative hypothesis (H_1) is accepted, indicating that the fixed effects model should be used.

Table 1. Chow Test for the Effect of Earnings Management and Leverage on Tax Aggressiveness

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

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.395445	(36,145)	0.0001
Cross-section Chi-square	85.873744	36	0.0000

The results of the Chow test for tax aggressiveness and financial management, as shown in the table above, indicate that the cross-sectional probability value is 0.000, which is less than the significance level of 0.05. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, suggesting that the fixed effects model is the appropriate estimation method.

Hausman Test

The Hausman test is used to determine whether the optimal model is the random effects model or the fixed effects model. In this study, the Hausman test was conducted during the panel data analysis by selecting the random effects option in the panel data section. If the probability value is greater than 0.05, the null hypothesis (H_0) is accepted, indicating that the random effects model is appropriate. However, if the probability is less

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than 0.05, then H_0 is rejected and the alternative hypothesis (H_1) is accepted, implying that the fixed effects model should be used.

Table 2. Hausman Test on the Effect of Earnings Management and Leverage on Tax Aggressiveness

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.785522	2	0.0001

Based on the results presented in the table above, the Hausman test for tax planning and earnings management shows an average probability value of 0.4767, which is greater than 0.05. Therefore, the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected, indicating that the random effects model is the appropriate model to be used in this study.

Heteroscedasticity Test

The heteroscedasticity test is conducted to determine whether there is unequal variance (heterogeneity) in the residuals of a regression model, which would violate the classical assumption of homoscedasticity—namely, that the variance of the residuals is constant across all observations. A key requirement for a valid regression model is the absence of heteroscedasticity.

Table 3. White Heteroscedasticity Test

Heteroskedasticity Test: Glejser

F-statistic	0.150460	Prob. F(2,181)	0.8604
Obs*R-squared	0.305400	Prob. Chi-Square(2)	0.8584
Scaled explained SS	0.303938	Prob. Chi-Square(2)	0.8590

Based on the table above, if the Obs × R-squared probability value is greater than the significance threshold, the null hypothesis (H_0) is accepted. In this case, the Chi-square value is 0.3189, which is greater than 0.10, indicating that the results of the White heteroscedasticity test show no evidence of heteroscedasticity in the context of tax planning and earnings management. Since the p-value exceeds the threshold of 0.01, H_0 is accepted and H_1 is rejected, confirming that heteroscedasticity is not present in the model.

Multicollinearity Test

Multicollinearity occurs when there is a perfect or strong linear relationship between two or more independent variables in a regression model. If the correlation coefficient between any two independent variables exceeds 0.8, this indicates the presence of multicollinearity. Conversely, if the correlation coefficients are less than 0.8, it implies that the regression model is free from multicollinearity.

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Table 4. Multicollinearity Test

Variance Inflation Factors
Date: 06/04/25 Time: 16:00
Sample: 1 185
Included observations: 184

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
SER02	0.042293	1.567402	1.049954
SER03	0.007871	2.661250	1.049954
C	0.009032	3.527080	NA

The results of the multicollinearity test show that the correlation coefficients between each pair of independent variables are less than 0.10, indicating that no multicollinearity exists in this regression model.

Normality Test

According to Ghozali (2006), the normality test is essential in regression-based models to ensure that the residuals follow a normal distribution. There are two main approaches to assess normality: graphical analysis and statistical testing. In this study, the Kolmogorov–Smirnov test was chosen to evaluate the normality of the residuals, as it is suitable for detecting deviations from normality. This test was conducted prior to data processing. If the significance value of the Kolmogorov–Smirnov test is greater than 0.01, the residuals are considered to be normally distributed.

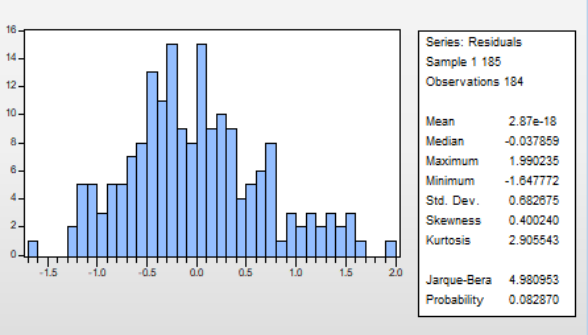

Figure 1. Normality Diagram

The table above shows that the significance value is approximately 0.082, which is greater than 0.05, indicating that the data follows a normal distribution.

Autocorrelation Test

The autocorrelation test is used to examine whether there is a correlation between residuals across observations in a regression model. Autocorrelation refers to the interaction between a particular residual and other information within the model over time. The most commonly used method for detecting autocorrelation is the Durbin–Watson (DW) test.

This test is conducted to determine whether the residuals in the regression model are independent from one observation to the next. If autocorrelation is present, it violates one of the classical linear regression assumptions. The Durbin–Watson statistic provides a quantitative measure to assess the presence of this issue.

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Table 5. Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.93846	Prob. F(2,179)	0.2846
Obs*R-squared	2.77336	Prob. Chi-Square(2)	0.2763

The results of the autocorrelation test above show a Chi-Square probability value of 0.2763, which is greater than 0.005. This indicates that autocorrelation is not present in the model, and the residuals are considered to be independent across observations.

The Effect of Earnings Management on Tax Aggressiveness

The influence of earnings management on tax aggressiveness can be observed in the data analysis results presented in the EViews output below.

Table 6. The Effect of Earnings Management on Tax Aggressiveness

Dependent Variable: Y				
Method: Least Squares				
Date: 06/04/25 Time: 19:54				
Sample (adjusted): 1 170				
Included observations: 169 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.119319	0.199017	2.599540	0.5496
C	1.430386	0.063724	18.44665	0.0000

The results of the regression analysis in Table 6 indicate that the t-statistic value for earnings management is 2.599, which is greater than the t-table value of 1.654 (at a 5% significance level with degrees of freedom, df = n – k = 169 – 3 = 166). This suggests that earnings management has a significant effect on tax aggressiveness. Furthermore, the probability value is 0.00, which is less than 0.05, indicating that the result is statistically significant and positive.

The Effect of Leverage on Tax Aggressiveness

Table 7. The Effect of Leverage on Tax Aggressiveness

Dependent Variable: Y				
Method: Least Squares				
Date: 06/05/25 Time: 17:07				
Sample (adjusted): 1 170				
Included observations: 169 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X2	-0.215225	0.084629	2.543149	0.0119
C	1.566686	0.079307	19.75477	0.0000

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The results of the panel regression analysis in Table 7 show that the t-statistic value for leverage is 2.543, which is greater than the t-table value of 1.654 (at a 5% significance level, with degrees of freedom df = n – k = 184 – 3 = 181). This indicates that leverage has a significant effect on tax aggressiveness. Furthermore, the probability value is 0.00, which is less than 0.05, suggesting that the relationship is statistically significant and positive.

The Effect of Earnings Management and Leverage on Tax Aggressiveness

Table 8. The Effect of Earnings Management and Leverage on Tax Aggressiveness

R-squared	0.045208	Mean dependent var	1.408330
Adjusted R-squared	0.063705	S.D. dependent var	0.675134
S.E. of regression	0.663659	Akaike info criterion	2.035495
Sum squared resid	73.11358	Schwarz criterion	2.091056
Log likelihood	168.9994	Hannan-Quinn criter.	2.058043
F-statistic	3.929931	Durbin-Watson stat	1.669396
Prob(F-statistic)	0.021499		

The F-test is used to determine whether the independent variables collectively influence changes in the dependent variable or to assess whether the regression model is appropriate for prediction. If the F-calculated value is greater than the F-table value, then the null hypothesis (H_0) is rejected, indicating that the independent variables simultaneously have a significant effect on the dependent variable. Conversely, if the F-calculated value is less than the F-table value, then H_0 is accepted, suggesting that the independent variables do not jointly affect the dependent variable.

The results of the panel data regression analysis show that the F-statistic for the variables earnings management and leverage is 3.05. With a significance level of α = 5%, degrees of freedom $df_1 = k - 1 = 2$ and $df_2 = n - k = 169 - 3 = 166$, the corresponding F-table value is 2.66 (two-tailed test). Since 3.05 > 2.66, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, indicating that earnings management and leverage jointly have a significant effect on tax aggressiveness. This is also supported by the probability value of 0.02, which is less than the significance level of 0.05, confirming that the effect is statistically significant.

CONCLUSION

Based on the findings of this study on manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period, it can be concluded that earnings management and leverage significantly influence tax aggressiveness. Earnings management is evidently employed by company management as a strategy to manipulate financial statements, particularly to reduce tax liabilities through both legal and borderline practices. Similarly, high leverage indicates the potential for tax aggressiveness by utilizing interest expenses as deductions from taxable income. Jointly, these variables suggest a corporate tendency toward aggressive tax planning, as reflected in the abnormal book-tax difference (AbBTD). These

results reinforce the assumptions of agency theory, which posits that managers may act opportunistically to serve personal or internal interests. In light of these findings, it is recommended that management uphold ethical standards in earnings management to ensure transparency and accountability. The use of leverage as a financing strategy should also comply with fiscal limitations set by the Directorate General of Taxes to avoid legal and reputational risks. Policymakers and regulators are encouraged to enhance tax supervision through risk-based reporting systems and greater integration of financial and tax reporting. Future research is advised to incorporate additional control variables, such as corporate governance or firm size, to gain a more comprehensive understanding of the determinants of tax aggressiveness.

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