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Managerial Ownership, Firm Size, Liquidity, and Capital Intensity as Determinants of Tax Avoidance: Evidence from Manufacturing Firms in Indonesia

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ABSTRACT

Tax avoidance is a critical issue in corporate governance, especially in emerging economies where tax revenues are vital for state financing. This study investigates the influence of managerial ownership, firm size, liquidity, and capital intensity on tax avoidance among manufacturing firms listed on the Indonesia Stock Exchange (IDX) during 2019–2023. Using purposive sampling and secondary data from 595 firm-year observations, tax avoidance is measured by the Effective Tax Rate (ETR) and analyzed with panel regression under the Random Effect Model, supported by robust tests. The results show that capital intensity has a significant effect on tax avoidance, while managerial ownership, cash ratio, and firm size are not significant. These findings highlight the role of asset structure in shaping corporate tax strategies and contribute to the literature within agency, political cost, pecking order, and tax shield frameworks, while offering practical insights for policymakers and managers.

Keywords: Tax Avoidance; Managerial Ownership; Firm Size; Liquidity; Capital Intensity

1. INTRODUCTION

Tax avoidance remains a critical issue in both global and national tax systems, particularly in emerging economies where tax revenues serve as the backbone of public financing (Shaffira et al., 2022; Hossain et al., 2024). In Indonesia, the manufacturing industry contributes significantly to the national economy, accounting for 18.67% of GDP in 2024 (Tempo, 2025), and simultaneously attracting attention for its tax compliance practices. Several high-profile cases, such as PT Bentoel Internasional Investama's cross-border loan scheme (Kompasiana, 2022) and PT Adaro Energy Tbk's transfer pricing practices (DetikFinance, 2019), illustrate the complexity of tax avoidance strategies and their substantial impact on state revenue. These practices highlight the need for deeper understanding of the determinants of corporate tax avoidance in Indonesia.

Tax avoidance, although legally permissible, creates fiscal risks by reducing tax revenues and generating market distortions, where firms that aggressively avoid taxes gain an unfair competitive advantage (Duhoon & Singh, 2023; Puspitasari et al., 2021). From a theoretical standpoint, agency theory suggests that managers may exploit tax strategies to maximize short-term returns, potentially misaligning with shareholders' long-term interests (Desai & Dharmapala, 2004). Political cost theory posits that larger firms face greater

scrutiny and thus adopt more cautious tax strategies (Watts & Zimmerman, 1986; Lanis & Richardson, 2013). Pecking order theory emphasizes financing preferences that indirectly influence tax liabilities (Myers & Majluf, 1984), while tax shield theory explains how capital-intensive firms benefit from depreciation deductions to legally reduce taxable income (Stickney & McGee, 1982; Graham, 2005).

Prior empirical studies, however, provide mixed results. Some find managerial ownership reduces tax avoidance due to better alignment of interests (Chen et al., 2010), while others report insignificant or even positive relationships (Putri & Lawita, 2019; Prasetyo et al., 2018). Firm size has also produced inconsistent findings, with evidence supporting positive, negative, or no significant effects (Mayndarto, 2022; Purnamasari & Yuniarwati, 2024; Kurniasih & Sari, 2013). Similarly, studies on liquidity present diverse conclusions (Anggraeni & Kurnia, 2017; Rifai & Atiningsih, 2019). By contrast, capital intensity is increasingly recognized as a key determinant since higher fixed assets create larger depreciation expenses that reduce effective tax rates (Prawati & Hutagalung, 2020; Ernawati & Indriyanto, 2024).

Building on these theoretical frameworks and empirical debates, this study investigates the effect of managerial ownership, firm size, liquidity, and capital intensity on tax avoidance among manufacturing firms listed on the Indonesia Stock Exchange (IDX) during 2019–2023. Using panel regression with robust testing on 595 firm-year observations, the study aims to provide empirical evidence on how ownership structures and financial characteristics shape tax behavior. The findings are expected to enrich the literature on corporate tax avoidance within the context of emerging economies while offering practical insights for regulators and managers in formulating effective tax strategies.

2. LITERATURE REVIEW

a. Tax Avoidance

Tax avoidance refers to corporate strategies aimed at reducing tax liabilities within the boundaries of existing laws, typically through exploitation of loopholes in tax regulations (Hanlon & Heitzman, 2010). While it is legally permissible, tax avoidance can erode state revenues and create unfair competition in markets (Puspitasari, Radita, & Firmansyah, 2021). In Indonesia, tax avoidance remains a critical issue, especially in the manufacturing sector, which represents the largest contributor to GDP and state tax revenues (Tempo, 2025). Practices such as transfer pricing and the use of tax havens highlight the urgency of understanding determinants of corporate tax avoidance in emerging markets (Kompasiana, 2022; DetikFinance, 2019).

b. Theoretical Framework

Several theories explain corporate tax avoidance behavior. Agency theory (Jensen & Meckling, 1976; Desai & Dharmapala, 2004) emphasizes conflicts of interest between managers and shareholders, where managers may engage in tax avoidance to maximize personal or short-term gains. Political cost theory (Watts & Zimmerman, 1986; Lanis & Richardson, 2013) suggests larger firms face greater scrutiny and therefore adopt more conservative tax strategies to avoid political costs. Pecking order theory (Myers & Majluf, 1984) explains financing choices that influence tax obligations, with debt financing providing tax shields through interest deductions. Tax shield theory (Stickney & McGee, 1982; Graham, 2005) underlines how depreciation and other deductible expenses provide opportunities for capital-intensive firms to legally lower taxable income.

c. Managerial Ownership

Managerial ownership represents the proportion of company shares held by managers or executives. Higher ownership may align managerial interests with shareholders, reducing opportunistic tax avoidance behavior (Chen, Chen, Cheng, & Shevlin, 2010). However, empirical findings are mixed: some studies report positive effects (Putri & Lawita, 2019), others negative (Haloho, 2021), and some insignificant (Prasetyo, Irwan, & Pramuka, 2018). This inconsistency suggests the need for further evidence in different industrial and institutional contexts.

d. Firm Size

Firm size, often proxied by total assets or natural log of assets, influences tax avoidance in two ways. Larger firms possess resources to engage in sophisticated tax planning (Mayndarto, 2022), but they also face higher political costs and greater scrutiny from regulators, leading to reduced tax aggressiveness (Hanlon & Heitzman, 2010). Studies in Indonesia reveal varied results: some show positive relationships (Selviani, 2019), others negative (Purnamasari & Yuniarwati, 2024), and some find no effect (Kurniasih & Sari, 2013).

e. Liquidity

Liquidity reflects a firm's ability to meet short-term obligations, commonly measured by current or cash ratios. Firms with high liquidity may be less motivated to avoid taxes due to sufficient cash flows (Anggraeni & Kurnia, 2017). Conversely, low-liquidity firms may rely on tax avoidance to preserve cash (Ramadhea Jr. et al., 2022). Similar to other variables, prior findings remain inconclusive: some suggest positive impacts (Budianti & Curry, 2018), others negative (Anggraeni & Kurnia, 2017), and some insignificant (Rifai & Atiningsih, 2019).

f. Capital Intensity

Capital intensity reflects the proportion of fixed assets relative to total assets. Firms with high capital intensity benefit from depreciation expenses, which act as non-debt tax shields to reduce taxable income (Prawati & Hutagalung, 2020; Ernawati & Indriyanto, 2024). Evidence from Indonesian manufacturing firms is also mixed: some studies confirm a positive relationship with tax avoidance (Pramaiswari & Fidiana, 2022), others negative (Apridila, Asmeri, & Putri, 2021), and some insignificant (Sholeha, 2019). This highlights the complexity of how asset structure influences tax strategies.

g. Research Gap

Previous studies have predominantly emphasized profitability as a determinant of tax avoidance. However, empirical evidence regarding managerial ownership, firm size, liquidity, and capital intensity remains inconsistent across contexts (Prastiyanti & Mahardhika, 2022; Malik, Pratiwi, & Umdiana, 2022). This study extends prior research by replacing profitability with liquidity and adding capital intensity as explanatory variables, thus offering a more comprehensive view of financial and ownership determinants of tax avoidance in Indonesian manufacturing firms during 2019–2023.

3. RESEARCH METHOD

a. Research Design

This study employs a quantitative research design with a hypothesis testing approach. Quantitative methods are chosen to systematically measure the effect of independent variables—managerial ownership, firm size, liquidity, and capital

intensity—on the dependent variable, tax avoidance. The analysis uses panel data regression to capture both cross-sectional and time-series variations during the observation period 2019–2023.

b. Population and Sample

The population of this study consists of all manufacturing companies listed on the Indonesia Stock Exchange (IDX). The manufacturing sector is selected because it contributes the largest number of listed companies and plays a significant role in Indonesia's GDP and tax revenues. The sample is determined through purposive sampling with the following criteria:

1. Manufacturing companies listed on the IDX during 2019–2023.
2. Companies that publish complete annual financial reports for the observation period.
3. Companies not reporting losses, ensuring accurate calculation of tax avoidance.
4. Availability of data on managerial ownership, firm size, liquidity, and capital intensity.

The final sample comprises 595 firm-year observations that meet these criteria.

c. Data Collection

This research uses secondary data obtained from annual financial reports of manufacturing companies published on the official IDX website (www.idx.co.id). Additional references are sourced from academic journals, prior studies, and relevant tax regulations.

Variable Measurement

- Dependent Variable:
  Tax Avoidance (TA), measured by the Effective Tax Rate (ETR), calculated as:

$$ETR = \frac{Income\ Tax\ Expense}{Earnings\ Before\ Tax} \text{ X } 100\%$$

  A lower ETR indicates higher levels of tax avoidance.

- Independent Variables:
  Managerial Ownership (MO): Percentage of shares held by directors and executives divided by total outstanding shares (Warfield et al., 1995).

$$MO = \frac{number\ of\ managerial\ shares}{total\ outstanding\ shares} \text{ X } 100\%$$

  Firm Size (FS) : Natural logarithm of total assets (Ln Total Assets) (Watts & Zimmerman, 1986).

  Firm Size = Ln Total Assets

  Liquidity (LIQ) : Measured by the Cash Ratio (CR), calculated as:

$$Cash\ Ratio = \frac{Cash\ and\ cash\ equivalents}{Current\ Liabilities\ Cash\ and\ equivalent}$$

  Capital Intensity (CI): Ratio of fixed assets to total assets (Stickney & McGee, 1982).

$$Capital\ Intensity\ Ratio\ (CIR) = \frac{Ratio\ of\ fixed\ assets}{total\ assets}$$

Data Analysis

The analysis is conducted using EViews 12 with the following steps:

a. Descriptive Statistics to summarize data characteristics.
b. Classical Assumption Tests including normality, multicollinearity, heteroskedasticity, and autocorrelation.
c. Model Selection Tests: Chow test, Hausman test, and Lagrange Multiplier (LM) test to determine the appropriate panel regression model.
d. Panel Data Regression: Employing either Fixed Effect Model (FEM) or Random Effect Model (REM), based on test results.
e. Robustness Test: To address outliers and non-normal data distribution.
f. Hypothesis Testing:
    - F-test for simultaneous effects.
    - t-test for partial effects.
    - R^2 (Coefficient of Determination) to evaluate the explanatory power of the model.

4. RESULTS AND ANALYSIS

Descriptive Statistics

The descriptive statistics of 595 firm-year observations show substantial variation across variables. The mean Effective Tax Rate (ETR) is 0.074, with values ranging from –1.952 to 2.941. Negative ETR reflects tax loss carryforwards or deferred tax, while extreme maximum values indicate cases where tax expenses exceeded pre-tax income. Managerial ownership ranges from 0% to 95%, suggesting diverse ownership structures. Capital intensity averages 1.431, with some firms displaying high asset dependence. Liquidity, proxied by the cash ratio, ranges from 0 to 5.099, indicating conditions from zero liquidity to excess cash holdings. Firm size varies between 24.0 and 33.7 (log assets), consistent with scale differences across manufacturing firms.

Classical Assumption Tests and Model Selection

Normality tests (Jarque-Bera) indicate non-normal distribution; thus, robustness tests are applied. Heteroskedasticity tests confirm homoscedasticity, and no multicollinearity is detected. Panel regression diagnostics suggest the Random Effect Model (REM) is the most appropriate, supported by the Hausman and LM tests.

Panel Regression and Robustness Test

The robust regression results indicate that capital intensity has a significant negative effect on tax avoidance ($p < 0.01$), suggesting that firms with higher fixed asset proportions tend to engage less in tax avoidance due to depreciation-based tax shields. In contrast, managerial ownership, liquidity (cash ratio), and firm size show no significant impact on tax avoidance.

Variable	Coefficient	p-value	Significance
Managerial Ownership	–0.004	0.968	Not Significant
Capital Intensity	–0.001	0.007	**Significant**
Liquidity (Cash Ratio)	–0.006	0.806	Not Significant
Firm Size	–0.017	0.087	Not Significant

Discussion

The finding that capital intensity significantly influences tax avoidance supports prior studies (Tang, 2015; Sardju & Letari, 2022; Prawati & Hutagalung, 2020). Firms with greater fixed asset investment benefit from depreciation as a non-debt tax shield (Stickney & McGee, 1982; Graham, 2005). This mechanism legally reduces taxable income, reducing the need for aggressive tax planning strategies. Hence, capital intensity is confirmed as an important determinant of tax behavior in Indonesian manufacturing firms.

In contrast, managerial ownership shows no significant effect, which contrasts with agency theory predictions. While higher managerial ownership is expected to align interests with shareholders, reducing opportunistic behavior (Chen et al., 2010), the results are consistent with studies that report no effect (Prasetyo et al., 2018). This suggests that in Indonesia, managerial ownership may not provide sufficient monitoring incentives to influence tax strategies, possibly due to relatively small ownership stakes.

Liquidity (cash ratio) also shows no significant effect on tax avoidance, consistent with Dyreng et al. (2010). Firms with high liquidity are not necessarily more compliant or aggressive in tax planning, suggesting that cash holdings may be allocated for other operational or investment priorities rather than tax strategies.

Finally, firm size does not significantly affect tax avoidance. This aligns with Gaertner (2022), who emphasizes inconsistent effects of firm size. While larger firms have more resources to engage in tax planning, they also face greater scrutiny from regulators and public stakeholders, which may neutralize the relationship.

Implications

The results highlight that asset structure, particularly capital intensity, is a more reliable predictor of tax avoidance compared to ownership or liquidity characteristics. This underscores the importance of incorporating capital-related policies in tax regulation. From a managerial perspective, the findings indicate that tax planning in Indonesian manufacturing firms is more dependent on structural asset characteristics than on corporate governance or cash management.

5. CONCLUSION

This study investigates the effect of managerial ownership, firm size, liquidity, and capital intensity on tax avoidance among 595 firm-year observations of manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2019–2023. Tax avoidance is measured by the Effective Tax Rate (ETR) and analyzed using panel regression under the Random Effect Model with robustness testing.

The results provide several key conclusions:

a. Capital intensity significantly influences tax avoidance, indicating that firms with higher fixed asset proportions benefit from depreciation-based tax shields, reducing the need for aggressive tax planning.
b. Managerial ownership, liquidity (cash ratio), and firm size do not significantly affect tax avoidance, suggesting that governance structures, cash management, and firm scale are not primary determinants of tax planning behavior in Indonesian manufacturing firms.
c. The findings highlight the importance of asset structure in shaping corporate tax strategies, offering empirical support for the tax shield theory while showing mixed evidence regarding agency and political cost theories.

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