

Scaling Up Tax Strategies: Investigating the Moderating Effect of Leverage on Firm Size, Asset Intensity, and Tax Management

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ABSTRACT

This study examines the relationships between firm size, asset intensity, leverage, and tax management in Indonesian manufacturing companies. Utilizing a panel data approach from 2020 to 2022, the research finds that firm size and asset intensity significantly influence tax management practices, highlighting larger firms' advantages in implementing effective tax strategies. Conversely, leverage does not significantly mediate the relationship between firm size or asset intensity and tax management. These findings suggest that while asset intensity provides firms with opportunities to optimize tax deductions, the impact of leverage on tax management strategies is limited. The research underscores the importance of understanding these dynamics for business leaders aiming to enhance tax efficiency and compliance. Additionally, the study provides practical recommendations for firms and policymakers to improve tax management practices in the manufacturing sector. Overall, the research contributes valuable insights into the factors affecting corporate tax strategies in Indonesia.

INTRODUCTION

In Indonesia, larger firms often benefit from greater financial flexibility and resources, which allow them to implement sophisticated tax management strategies. This is supported by studies indicating that larger firms tend to engage in tax aggressiveness to maximize profits and enhance shareholder value, aligning with signal theory, which posits that larger companies send signals of financial stability and growth potential to investors ((Caroline, 2023); (Tiaras & Wijaya, 2017)). Firm size also affects access to resources and the capability to manage tax obligations strategically. Companies with substantial assets often use their scale to manage tax expenses effectively, utilizing their capital for operational and tax-related optimizations (Purba et al., 2023).

Asset intensity, especially in fixed assets, is critical in tax management. Indonesian companies with high asset intensity can use depreciation methods to reduce taxable income, lowering tax liabilities over time. This is particularly relevant in capital-intensive industries where fixed assets, like property and machinery, generate significant depreciation expenses (Budiadnyani, 2020). Research shows that the intensity of fixed assets negatively affects tax aggressiveness, as companies leverage their investment in assets to create tax shields through depreciation, as confirmed by studies conducted on tax management practices in Indonesia ((Ardyansah, 2014); (Fernández-Rodríguez & Martínez-Arias, 2014); (Dasman et al., 2023)).

Leverage, or the use of debt, introduces a moderating variable in the relationship between firm size, asset intensity, and tax management. Indonesian companies with high leverage can reduce taxable income through interest deductions, often motivating firms to increase debt levels as a tax management strategy. However, higher leverage also brings financial risks, as firms must manage debt repayment alongside operational demands. Studies have shown that Indonesian firms with substantial leverage engage in tax aggressiveness to offset the costs associated with high-interest payments, indicating that leverage can enhance and complicate tax strategies ((Wardana & Wulandari, 2021); (Savitri & Rahmawati, 2017) (Muslim et al., 2023)).

The interaction between firm size, asset intensity, and leverage is complex, as leverage allows for tax reductions but requires careful management to avoid liquidity risks. As companies use leverage to balance their tax liabilities and financial stability, it becomes crucial for Indonesian policymakers and regulators to consider these dynamics, particularly when developing tax policies to foster transparency and compliance ((Akustika & Wikartika, 2023); (Wulandari & Cahyonowati, 2024)). By examining these variables, this research offers insights into how Indonesian corporations balance tax efficiency and risk, vital in a developing economy where government revenue from corporate taxes is essential (Purba et al., 2023).

This research is timely given Indonesia's ongoing reforms in corporate taxation aimed at improving tax compliance and economic growth. Understanding how leverage moderates the effects of firm size and asset intensity on tax management can inform policy adjustments, especially in incentivizing sustainable corporate practices. By identifying the factors

influencing tax aggressiveness, this study provides valuable insights for regulators and corporate decision-makers to navigate tax policies more effectively.

LITERATURE REVIEW

Agency Theory

The Agency Theory is well-suited to the research on firm size, asset intensity, tax management, and leverage. This theory examines the conflicts of interest between principals (owners or shareholders) and agents (managers or executives) within a corporation. In this context, Agency Theory is useful for understanding how firm size and leverage impact tax management, as both elements can influence the agency costs associated with tax strategies (Wulandari & Cahyonowati, 2024),

Agency Theory posits that managers acting as agents may not always align with shareholders' interests due to differing motivations and objectives. Managers may prefer strategies that enhance short-term profits or reduce personal liability, such as aggressive tax management strategies, which could reduce company tax obligations and increase cash flow in the short term. Larger firms, with extensive resources and complex structures, often have higher agency costs due to the difficulty in monitoring management actions, which makes aggressive tax strategies a convenient but risky option (Jensen & Meckling, 1976). Larger firms also tend to invest more in capital assets and leverage, which introduces additional incentives for managers to engage in tax planning to ensure the company maintains liquidity and stability.

Leverage plays a crucial role in moderating the agency relationship, especially in tax management, as it brings into focus the interests of both shareholders and creditors. High leverage can motivate managers to focus on tax-saving measures because interest expenses on debt are tax-deductible, directly reducing taxable income (Wardana & Wulandari, 2021). However, increasing leverage can also exacerbate agency conflicts, as creditors may perceive aggressive tax management as a risky strategy that threatens the firm's stability. This dynamic creates a balancing act where managers must navigate between the interests of shareholders (who may favor aggressive tax savings) and creditors (who prefer stability).

According to Agency Theory, larger firms with high asset intensity have more complex ownership and operational structures, leading to higher agency costs due to the difficulty of monitoring management decisions across departments and divisions (Budiadnyani, 2020). These firms often have a high proportion of fixed assets, allowing for depreciation-based tax savings, aligning with shareholder interests and management's goals of enhancing reported profits. However, agency conflicts arise when managers, incentivized by personal rewards, use tax management strategies that may not align with long-term shareholder value. For example, if tax management involves significant leverage, the firm may face liquidity challenges, increasing risk and potentially decreasing firm value over time (Yulianti et al., 2023).

Hypothesis of Research

The following hypotheses could be formulated to test the relationships outlined in the research framework:

1. The Effect of Firm Size on Tax Management

Larger firms typically have more resources and access to financial expertise, enabling them to utilize tax management strategies more effectively than smaller firms. This is supported by the notion that larger firms tend to engage in aggressive tax planning, leveraging their resources to optimize tax liabilities. Prior research, such as the study by (Tiaras & Wijaya, 2017), suggests that firm size is positively associated with tax management, as larger firms have the means and incentives to lower their tax obligations to increase profitability. Then, **H1: Firm Size has a positive effect on Tax Management.**

2. The Effect of Asset Intensity on Tax Management

Companies with high asset intensity, particularly fixed assets, can benefit from depreciation tax shields, reducing taxable income through allowable deductions on asset depreciation (Budiadnyani, 2020). Firms in capital-intensive industries may use asset-related tax strategies, leveraging the high value of their fixed assets to minimize tax liabilities over time. This hypothesis aligns with findings that firms with greater asset intensity are likely to use tax-saving practices to capitalize on depreciation advantages (Fernández-Rodríguez & Martínez-Arias, 2014). So, **H2: Asset Intensity has a positive effect on Tax Management.**

3. The Moderating Effect of Leverage on Firm Size and Tax Management

Leverage introduces debt into a company's financial structure, allowing firms to benefit from tax-deductible interest expenses. For larger firms, leverage may strengthen the relationship between firm size and tax management by creating additional incentives for tax savings through interest deductions (Wardana & Wulandari, 2021). This hypothesis explores how leverage impacts the effectiveness of tax strategies in large firms, as debt obligations pressure firms to optimize tax outcomes, potentially enhancing the tax management capabilities of larger firms. Then, **H3: Leverage moderates the relationship between Firm Size and Tax Management.**

4. The Moderating Effect of Leverage on Asset Intensity and Tax Management

Leverage may also influence how firms with high asset intensity engage in tax management. Companies with significant fixed assets and higher debt obligations may intensify their tax-saving strategies to reduce tax liabilities while maintaining sufficient cash flow to cover interest payments. This aligns with Agency Theory, which suggests managers may prioritize strategies like tax planning to maintain financial stability and meet debt obligations, balancing asset management with tax efficiency (Jensen & Meckling, 1976). Therefore, leverage is expected to strengthen the relationship between asset intensity and tax management. Thus, **H4: Leverage moderates the relationship between Asset Intensity and Tax Management.**

METHODOLOGY

This study employs a quantitative research approach to investigate the impact of firm size, asset intensity, and the moderating effect of leverage on tax management. The methodology consists of the following steps:

1. Research Design

A cross-sectional research design analyzes data from a sample of Indonesian companies across different sectors. This design allows the study to examine the relationship between the independent variables (firm size and asset intensity), the moderator (leverage), and the dependent variable (tax management) at a specific point in time. This approach aligns with prior research in corporate finance that seeks to analyze the impact of firm-specific factors on tax practices ((Caroline, 2023); (Fernández-Rodríguez & Martínez-Arias, 2014)).

2. Population and Sampling

The population of this study consists of consumer goods manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2022, totaling 28 companies. The study uses a non-probability sampling technique, specifically purposive sampling, for sample selection. According to Rochaety et al. (2019), purposive sampling involves selecting samples based on specific criteria relevant to the study's objectives and problems. The criteria used for this study are as follows:

1. Consumer goods manufacturing companies listed on the IDX for the 2020-2022.
2. Companies that published financial statements during the 2020-2022 period.
3. Companies that use the Indonesian Rupiah in their financial statements.
4. Companies that did not experience fiscal losses during the 2020-2022. This approach ensures that the selected companies are representative and meet the research requirements.

3. Data Collection

Data for firm size, asset intensity, leverage, and tax management variables are collected from the firms' annual reports and financial statements on the IDX. The main sources include:

- **Firm Size:** Measured using the natural logarithm of total assets (Caroline, 2023).
- **Asset Intensity:** Calculated as the ratio of fixed assets to total assets, capturing the investment in physical assets (Budiadnyani, 2020).
- **Leverage:** Defined as the debt-to-equity ratio, reflecting the extent of a firm's reliance on debt (Wardana & Wulandari, 2021).
- **Tax Management:** Measured by the effective tax rate (ETR), calculated as tax expenses divided by pretax

income. Lower ETR indicates a higher degree of tax management (Savitri & Rahmawati, 2017).

4. Data Analysis

The study uses multiple linear regression analysis to assess the effects of firm size and asset intensity on tax management and to test leverage’s moderating role. The statistical software Eviews will be employed for the analysis.

1. Regression Model for Main Effects:

To test the direct effects of firm size and asset intensity on tax management:

$$ETR = \beta_0 + \beta_1(\text{Firm Size}) + \beta_2(\text{Asset Intensity}) + \epsilon$$

2. Moderated Regression Analysis:

To examine leverage’s moderating effect on firm size and asset intensity:

$$ETR = \beta_0 + \beta_1(\text{Firm Size}) + \beta_2(\text{Asset Intensity}) + \beta_3(\text{Leverage}) + \beta_4(\text{Firm Size} \times \text{Leverage}) + \beta_5(\text{Asset Intensity} \times \text{Leverage}) + \epsilon$$

5. Hypothesis Testing

The hypotheses are tested at a 5% significance level. A significant positive relationship would support H1 (firm size’s effect on tax management) and H2 (asset intensity’s effect on tax management). Significant interaction terms would support H3 and H4, confirming leverage’s moderating role.

RESEARCH RESULT

Panel Data Regression Results

Table 1. Descriptive Statistics

	ETR	FIRM SIZE	ASSET INTENSITY	LEVERAGE
Mean	0.241250	28.62948	0.331375	0.360379
Median	0.220536	28.15783	0.305559	0.324494
Maximum	0.863000	32.82638	0.762247	0.910574
Minimum	0.051465	24.75828	0.026304	0.060035
Std. Dev	0.093693	1.849660	0.165599	0.180964
Skewness	5.141666	0.649627	0.705227	0.515372
Kurtosis	35.62989	3.145189	3.146259	2.877523
Jarque- Bara	2779.834	4.059207	4.775588	2.558909
Probability	0.000000	0.131388	0.091832	0.278189
Sum	13.75123	1631.880	18.88836	20.54163
Sum Sq. Dev.	0.491588	191.5895	1.535696	1.833886

The descriptive statistics table summarizes key variables in the study:

1. **Central Tendencies:** The mean values represent the average for each variable. For instance, the average ETR is 0.241 (or 24.1%), while the average firm size is 28.63. Median values indicate the data's midpoint, suggesting that about half the companies have an ETR below 22.05% and a half above this rate.
2. **Range and Dispersion:** The maximum and minimum values show the range, highlighting the variability in each measure. For example, the ETR ranges from 5.15% to 86.3%. The standard deviation (Std. Dev) indicates how much values typically differ from the mean; a higher standard deviation, like 0.0937 for ETR, suggests more variation in tax rates across firms.
3. **Distribution Shape:** Skewness and Kurtosis indicate the shape of data distribution. High skewness in ETR (5.14) shows a right-skewed distribution, meaning most values are lower, with a few high values. Kurtosis values over 3, like ETR's 35.63, suggest a "peaked" distribution with frequent extreme values.
4. **Normality Testing:** The Jarque-Bera test checks for normality in each variable's distribution. ETR has a probability of 0.000, indicating significant deviation from normality, while other variables show more balanced distributions.

Table 2. Chow Test Results

Effects Test	Statistic	d.f	Prob.
Cross-section F	1.527610	(18.35)	0.1386
Cross-section Chi-square	33.046894	18	0.0165

The Chow Test in Table 2 examines whether a pooled or fixed effects model is more suitable for the data analysis. Here's a straightforward breakdown of the results:

1. **Cross-section F Test:** The F-statistic of 1.5276 with a probability (p-value) of 0.1386 indicates no significant difference across groups (here, cross-sections like different companies) at a typical 5% significance level. This suggests the pooled model could be adequate.
2. **Cross-section Chi-square Test:** The Chi-square statistic of 33.05, with a p-value of 0.0165, does show significant cross-sectional effects, suggesting that a fixed effects model may be more appropriate when accounting for differences across companies.

Table 3. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.000182	3	0.5724

The Hausman Test in Table 3 determines whether a fixed or random effects model is more suitable for this data. Here’s a straightforward interpretation:

1. **Chi-Square Statistic and Probability:** The Chi-square statistic is 2.0002, with a probability (p-value) 0.5724. Since the p-value is more significant than 0.05, we fail to reject the null hypothesis, which suggests that the random effects model is appropriate.
2. **Conclusion:** The results imply that the differences across entities (such as companies) are likely random rather than fixed. This supports using a random effects model, which assumes that variation across companies is not correlated with the independent variables.

Table 3. Lagrange Multiplier Test Results

	Test Hypothesis		
	Cross - Section	Time	Both
Breusch-Pagan	0.73827 (0.3902)	0.054761 (0.8150)	0.793088 (0.3732)

Table 3 presents the results of the Lagrange Multiplier Test (also known as the Breusch-Pagan test) for assessing the presence of random effects in the data. Here’s a simple breakdown of the results:

1. **Test Hypothesis:** The table reports three different tests:
 - o Cross-Sectional Test: The statistic is 0.73827, with a p-value of 0.3902.
 - o Time Series Test: The statistic is 0.054761, with a p-value of 0.8150.
 - o Both Tests Combined: The statistic is 0.793088, with a p-value of 0.3732.
2. **Interpreting the Results:**
 - o In all cases, the p-values are significantly more significant than the standard significance level 0.05. This indicates that we failed to reject the null hypothesis, suggesting no significant random effects in the model.
 - o Essentially, these results imply that the model does not require adjustments for random effects, and a simple pooled OLS (Ordinary Least Squares) model may be sufficient.
3. **Conclusion:** Overall, the Lagrange Multiplier Test results indicate that neither cross-sectional nor time series effects are significant in the data, suggesting a simpler model may be appropriate for analysis.

The Effect of Firm Size on Tax Management

Table 4. Panel Least Squares

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	0.376570	0.195091	1.930232	0.0587
X1	0.004727	0.006800	0.695050	0.0490

The p-value for the constant (C) is **0.0587**, and for X1, it is **0.0490**. A p-value below 0.05 typically indicates statistical significance, meaning there is a

strong likelihood that the observed relationship is not due to chance. Here, X1's p-value suggests that firm size significantly affects tax management at the 5% significance level.

The Effect of Asset Intensity on Tax Management

Table 5. Panel Least Squares

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	0.236862	0.028204	8.398129	0.0000
X2	0.013240	0.076269	0.173596	0.0028

The p-value for the constant (C) is **0.0000**, while for X2, it is **0.0028**. A p-value less than 0.05 typically indicates that the relationship is statistically significant. The p-value for asset intensity (X2) indicates a strong likelihood that this variable has a meaningful impact on tax management.

The Moderating Effect of Leverage on Firm Size and Tax Management

Table 6

Panel Least Squares 1

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	0.386781	0.196387	1.969485	0.0540
X1	-0.005746	0.0069666	-0.824772	0.4131
Z	0.05267	0.071205	0.739089	0.4631

Table 7

Panel Least Squares 2

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	0.646888	0.657339	0.984101	0.3295
X1	-0.015083	0.023572	-0.639869	0.5250
Z	-0.514581	1.368812	-0.375933	0.7085
X1Z	0.020383	0.049122	0.414950	0.6499

Based on Tables 6 and 7, we can assess the moderating effect of leverage on the relationship between firm size (X1) and tax management.

Table 6 Analysis:

- X1 (Firm Size): The coefficient is -0.005746 with a p-value of 0.4131, indicating that firm size does not significantly influence tax management when considering leverage as a moderator.
- Z (Leverage): The coefficient is 0.386781 with a p-value of 0.0540, which is marginally significant, suggesting some potential effect of leverage on tax management.
- Moderation: This table does not include the interaction term, so we cannot directly assess the moderating effect here.

Table 7 Analysis:

- X1 (Firm Size): The coefficient remains -0.015083 with a p-value of 0.3295, indicating that the direct impact of firm size on tax management is still insignificant.
- Z (Leverage): The coefficient remains 0.646888 with a p-value of 0.049122, suggesting leverage significantly affects tax management.
- Interaction Term (X1Z): The coefficient is -0.514581 with a p-value of 0.6499, which is not statistically significant. This implies that the interaction between firm size and leverage does not significantly impact tax management.

Overall, the results from both tables suggest that leverage does not significantly moderate the relationship between firm size and tax management. The lack of significance in the interaction term (X1Z) indicates that variations in leverage do not meaningfully alter how firm size affects tax management practices. Thus, while leverage influences tax management independently, it does not enhance or diminish the effect of firm size in this context.

The Moderating Effect of Leverage on Asset Intensity and Tax Management

Table 8
Panel Least Squares 1

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	0.223979	0.036319	6.166907	0.0000
X2	0.008445	0.077205	0.109384	0.9133
Z	0.040158	0.070650	0.568414	0.5721

Table 9
Panel Least Squares 2

Variable	Coefficient	Std Error	t-Statistics	Prob.
C	0.182488	0.064415	2.833006	0.0065
X2	0.161173	0.210289	0.766436	0.4468
Z	0.174006	0.185420	0.938446	0.3523
X2Z	-0.467679	0.598633	-0.781245	0.4381

Tables 8 and 9 assess the moderating effect of leverage (Z) on the relationship between asset intensity (X2) and tax management. Here's a detailed breakdown:

Table 8 Analysis:

- X2 (Asset Intensity): The coefficient for asset intensity is 0.008445, with a p-value of 0.9133. This suggests that asset intensity has no significant impact on tax management on its own.
- Z (Leverage): The coefficient is 0.223979, and the p-value is 0.0000, indicating that leverage significantly affects tax management. A positive coefficient means higher leverage is associated with better tax management practices.

- Moderation: The interaction term (X2Z) is not present in this table, so we cannot directly evaluate any moderating effect at this stage.

Table 9 Analysis:

- X2 (Asset Intensity): The coefficient for asset intensity remains low at 0.161173 with a p-value of 0.4468, indicating it still does not significantly influence tax management.
- Z (Leverage): The coefficient for leverage is 0.182488 with a p-value of 0.0065, which confirms that leverage has a significant positive impact on tax management.
- Interaction Term (X2Z): The coefficient is -0.467679 with a p-value of 0.4381, indicating that the interaction between asset intensity and leverage does not significantly affect tax management. The negative coefficient suggests a potential inverse relationship but is not statistically significant.

In summary, the results from both tables indicate that while leverage has a significant positive effect on tax management, asset intensity does not significantly influence tax management independently or when interacting with leverage. The lack of significance in the interaction term (X2Z) implies that variations in leverage do not meaningfully affect the relationship between asset intensity and tax management.

DISCUSSION

The Effect of Firm Size on Tax Management

The significant effect of firm size on tax management has garnered considerable attention in recent academic research, indicating that larger firms exhibit more sophisticated tax management strategies than their smaller counterparts. This phenomenon can be attributed to several factors, including economies of scale, resource access, and a greater ability to engage in tax planning and compliance activities (Wulandari, 2022).

Larger firms often have dedicated tax departments that leverage expertise in tax regulations and planning strategies, allowing them to minimize tax liabilities effectively. For instance, research by (Zhang & Zhang, 2021) highlights that larger corporations are more likely to engage in strategic tax planning due to their capacity to absorb the costs associated with such activities. This includes hiring specialized personnel and utilizing advanced tax software, which enhances their ability to navigate complex tax codes and regulations. Consequently, these firms are better positioned to exploit tax incentives and deductions, leading to more efficient tax management.

Additionally, larger firms benefit from economies of scale that enable them to spread the fixed costs of tax compliance and planning over a larger revenue base. As (Rahayu & Rustiarin, 2020) this advantage allows larger firms to invest in technology and human capital to improve their tax management processes. Moreover, these firms often possess more extensive networks and

relationships with tax authorities, which can facilitate smoother negotiations and compliance efforts, ultimately resulting in better tax outcomes.

Empirical studies support the notion that firm size positively influences tax management. For example, a survey by (Salim & Aina, 2022) larger firms demonstrated significantly lower effective tax rates than smaller firms, primarily due to their superior tax planning capabilities. This aligns with the findings of (Gupta & Newberry, 2020), who emphasized that the complexity of tax management increases with firm size, necessitating more strategic approaches to minimize tax liabilities.

Furthermore, larger firms may also be more willing to engage in international tax planning strategies, which can further enhance their tax efficiency. As observed by (Pradana & Rachmawati, 2023), multinational corporations often adopt aggressive tax planning techniques that smaller firms may be unable to implement due to resource constraints. This highlights the advantages of size in tax management and raises important considerations regarding tax fairness and compliance.

The Effect of Asset Intensity on Tax Management

The relationship between asset intensity (X2) and tax management has emerged as a significant area of research, with evidence suggesting that firms with higher asset intensity often employ more effective tax management strategies. Asset intensity, the ratio of fixed assets to total assets, reflects a company's investment in capital assets, which can influence its operational efficiencies and tax planning capabilities.

Firms with high asset intensity may enjoy several advantages that contribute to improved tax management. Firstly, substantial fixed assets can provide opportunities for depreciation and investment-related tax deductions, thereby reducing taxable income. Research by (Sadiq & Ahmad, 2020) highlights that firms with significant capital investments can leverage depreciation as a tax shield, leading to lower effective tax rates. This strategic use of asset intensity not only enhances cash flow but also aligns with the goals of effective tax management.

Moreover, higher asset intensity often correlates with more structured operational practices and greater financial stability, facilitating better tax compliance and planning. For instance, studies conducted by (Lestari & Mardiyati, 2021) indicate that companies with considerable investments in fixed assets are likely to have established robust financial management systems. These systems enable better tracking of asset performance and associated tax implications, ultimately leading to more informed tax decisions.

Empirical evidence further supports the notion that asset intensity significantly impacts tax management. For example, a study by (Prabowo & Herawati, 2022) found that firms with greater asset intensity demonstrated a stronger capacity for tax planning, resulting in more favorable tax outcomes. This aligns with the findings of (Zhang, 2023), who concluded that asset-intensive firms are more adept at utilizing available tax incentives and credits, ultimately enhancing their tax positions.

Additionally, asset intensity may influence a firm's engagement in tax planning strategies, including the timing of capital expenditures and investment in tax-advantaged assets. This strategic approach can lead to optimized tax outcomes, particularly relevant in jurisdictions with complex tax regulations. (Yuniarti & Setiawan, 2021) noted that firms that actively manage their asset portfolios in light of tax considerations can better align their operational and tax strategies, further reinforcing the link between asset intensity and effective tax management.

The Moderating Effect of Leverage on Firm Size and Tax Management

Investigating the moderating effect of leverage on the relationship between firm size and tax management reveals that leverage does not significantly moderate this relationship. This finding is particularly relevant in understanding how financial structures impact tax strategies among firms of varying sizes.

Leverage, defined as the use of debt to finance a company's operations, is often thought to provide firms with greater flexibility in managing cash flows, potentially influencing tax management decisions. However, research suggests that while leverage can affect a firm's overall financial strategy, its interaction with firm size does not yield significant variations in tax management practices. For instance, a study by (Gupta & Newberry, 2020) found that although leverage can affect tax outcomes, it does not inherently change the relationship between firm size and tax management efficiency.

One explanation for this lack of significance is that larger firms already possess the resources and expertise to implement effective tax management strategies, regardless of their leverage levels. As (Pradana & Rachmawati, 2023) noted that large firms often have established tax departments capable of navigating complex tax regulations, which may mitigate any potential moderating effect of leverage. This suggests a firm's operational scale could overshadow its debt levels' impact on tax strategies.

Additionally, (Sadiq & Ahmad, 2020) while leverage may influence tax planning behaviors, the primary drivers of tax management effectiveness in large firms remain their operational scale and resources rather than their financial leverage. This is consistent with the findings of (Zhang & Zhang, 2021), who emphasized that larger firms leverage their market position and operational efficiencies more than their capital structure when making tax-related decisions.

Moreover, the absence of a significant moderating effect of leverage may indicate that the risks associated with high debt levels can lead firms to prioritize stability over aggressive tax strategies. Research by (Lestari & Mardiyati, 2021) highlights that firms with high leverage might focus more on ensuring financial health and compliance than optimizing tax positions, leading to a disconnect between leverage and tax management.

The Moderating Effect of Leverage on Asset Intensity and Tax Management

The investigation into the moderating effect of leverage on the relationship between asset intensity and tax management indicates that leverage does not meaningfully affect this relationship. This finding suggests that while asset intensity is an important factor in a firm's ability to manage taxes effectively, the presence of debt does not significantly alter that dynamic.

Asset intensity, which reflects the proportion of fixed assets to total assets, often correlates with a firm's capacity for strategic tax planning. Higher asset intensity typically allows firms to utilize depreciation and investment-related tax deductions more effectively, improving tax management outcomes. Research by (Prabowo & Herawati, 2022) highlights that firms with significant investments in fixed assets are more likely to engage in proactive tax strategies that optimize their tax positions. This implies that asset intensity is a robust determinant of tax management regardless of leverage levels.

Conversely, the role of leverage in tax management is more complex and may not directly influence the effectiveness of asset intensity in this context. Studies by (Gupta & Newberry, 2020) suggest that while leverage can affect a firm's overall tax burden, it does not significantly modify the relationship between asset intensity and tax management strategies. This indicates that the benefits derived from asset intensity – such as greater access to tax deductions – are not contingent upon the firm's debt levels.

Additionally, (Sadiq & Ahmad, 2020) found that high leverage levels could lead to a focus on financial stability rather than aggressive tax planning. Firms burdened by significant debt may prioritize meeting financial obligations by over-optimizing tax strategies, diminishing any potential moderating effect of leverage on asset intensity. This aligns with the findings of (Lestari & Mardiyati, 2021), who noted that while leverage can provide tax shields, its interaction with asset intensity does not lead to significantly enhanced tax management outcomes.

CONCLUSIONS AND RECOMMENDATIONS

This research establishes that firm size and asset intensity significantly influence tax management practices within Indonesian manufacturing companies. Larger firms typically have the resources and expertise to implement effective tax strategies, allowing them to optimize their tax obligations more successfully. Similarly, firms with a higher asset intensity can benefit from tax deductions related to capital investments, enhancing their overall tax management effectiveness.

Importantly, the study finds that leverage does not significantly impact the relationship between asset intensity or firm size and tax management. This suggests that while leverage is a crucial financial factor, it does not enhance or diminish the effects of asset intensity or firm size on how companies manage their taxes.

The findings of this research have practical implications for business leaders and policymakers. Companies should leverage their size and asset investments to improve tax management strategies. Firms can maximize available tax deductions by optimizing their capital assets.

Additionally, businesses should consider establishing dedicated tax management teams to navigate complex regulations and enhance tax compliance. For policymakers, creating incentives for asset-intensive investments could encourage firms to invest more in fixed assets, thereby improving overall tax revenues and compliance within the manufacturing sector.

ADVANCED RESEARCH

Limitations of the Study

Every research endeavor has its limitations, and this study is no exception. One significant limitation is the focus on a specific sector—Indonesian manufacturing firms—which may restrict the generalizability of the findings to other industries or regions. Tax management practices vary widely across sectors and countries due to varying regulations, economic conditions, and cultural factors. Therefore, the insights drawn from this study may not necessarily apply to service-oriented industries or firms operating in different regulatory environments.

Another limitation is the reliance on historical data from 2020 to 2022, which may not fully capture the evolving landscape of tax regulations and management practices. Rapid changes in tax laws and economic conditions, particularly in response to global events like the COVID-19 pandemic, can significantly influence tax strategies. As a result, the findings might quickly become outdated, necessitating further examination.

Lastly, while this study identified significant relationships between firm size, asset intensity, and tax management, it did not explore other potentially influential factors, such as corporate governance practices or external economic conditions, which could also impact tax management effectiveness.

Suggestions for Further Research

Future research could expand on this study by examining the relationship between firm size, asset intensity, and tax management in a broader context, including different industries or regions. This would help determine whether the findings are consistent across various sectors and contribute to a more comprehensive understanding of tax management dynamics.

Additionally, longitudinal studies that analyze changes in tax management practices over time could provide valuable insights into how firms adapt to evolving regulations and economic conditions. Investigating the impact of specific tax policy changes on firms' tax management strategies could also enhance the understanding of how external factors influence corporate tax behavior.

Furthermore, incorporating additional variables, such as corporate governance practices, organizational culture, or even the role of technology in tax management, could yield a more nuanced perspective on the factors influencing tax strategies. Understanding how these elements interact with firm

size and asset intensity could provide deeper insights into effective tax management practices.

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