



The Effect Of Capital Intensity And Profitability On Tax Planning With Board Independence As A Moderating Variable

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ABSTRACT

Tax planning is a strategic issue as governments increasingly rely on corporate tax revenue to finance development. This study examines the effects of capital intensity and profitability on corporate tax planning and evaluates the moderating role of board independence. Using a quantitative causal-comparative design, the study analyzes food and beverage companies listed on the Indonesia Stock Exchange during 2020–2024. Firms were selected through purposive sampling based on audited financial statements, positive earnings, and complete governance disclosures. Secondary data were analyzed using multiple linear regression and moderated regression analysis. The results indicate that capital intensity and profitability do not significantly affect tax planning, and board independence does not moderate these relationships. Nevertheless, the overall model is statistically significant, suggesting that tax planning may be influenced by other organizational or institutional factors. This study contributes to the literature by reassessing the role of financial and governance variables in tax planning research and offers practical insights for regulators and managers to strengthen governance quality and ensure tax strategies remain efficient, compliant, and sustainable.

INTRODUCTION

Taxes are the most vital fiscal instrument for developing countries such as Indonesia, contributing more than 80% of state revenue used to finance infrastructure, education, health, and social protection programs. This high dependence makes fiscal revenue stability a crucial requirement for sustainable development. However, tax realization during the 2019–2023 period experienced significant fluctuations, declining sharply in 2020 due to the COVID-19 pandemic and recovering strongly in 2022–2023 alongside global economic improvement and rising commodity prices (Oktaviyoni, 2024). These dynamics indicate the vulnerability of state revenue

to external shocks and underscore the urgency of expanding the tax base and strengthening taxpayer compliance.

Table 1 Tax Revenue Statistics

Year	Tax Realization	Target Percentage
2019	1.332,67	84,5%
2020	1.072,11	89,4%
2021	1.278,63	104,0%
2022	1.716,77	115,6%
2023	1.869,23	102,8%

Source : pajak.go.id

The food and beverage (F&B) industry is one of the most contributive manufacturing subsectors in Indonesia, serving the consumption needs of more than 270 million people and showing relatively stable growth with a significant fiscal impact. In the fourth quarter of 2024, the manufacturing sector contributed 25.4% of total national tax revenue, with the F&B sub-sector among the largest contributors (Dwijayanto & Kurniawan, 2024). However, empirical evidence shows that the tax contribution of F&B companies does not always reflect their true potential, as several major firms reported Cash Effective Tax Rates (CETR) below the statutory 22% corporate tax rate, in some cases as low as 16–19%, indicating aggressive tax planning practices.

Table 2 List of Food and Beverage Subsector Companies in 2024 with Low CETR

No	Company Name	CETR
1.	Akasha Wira Internasional Tbk (ADES)	19%
2.	PT Formosa Ingredient Factory Tbk (BOBA)	16%
3.	PT Campina Ice Cream Industry Tbk (CAMP)	18%
4.	PT Wilmar Cahaya Indonesia Tbk (CEKA)	17%
5.	PT Sariguna Primatirta Tbk (CLEO)	19%

Source : Data processed by researchers (2025)

The food and beverage (F&B) sector is one of the largest manufacturing subsectors in Indonesia that plays a strategic role in the national economy, yet it continues to face indications of manipulation and profit efficiency practices that may reduce the quality of financial reporting (Yulianti & Rahmah, 2022). Tax planning practices in this context create a dilemma: while they are often justified as legal efficiency strategies, aggressive implementation may erode the national tax base and raise concerns related to corporate ethics and fiscal compliance (Serena & Nuswantara, 2024; Rudyanto et al., 2023). This issue is further intensified by Indonesia's self-assessment system, which grants taxpayers discretion in calculating and reporting tax obligations, thereby opening regulatory loopholes that can be exploited to minimize tax burdens (Fitdra & Inayati, 2022; Hossain et al., 2024). In the literature, two internal corporate characteristics are frequently linked to tax planning behavior, namely capital intensity and profitability. Capital intensity reflects the proportion of fixed assets to total assets, allowing firms to utilize depreciation expenses as a mechanism to reduce taxable income (Komalasari & Lestari, 2024; Alfian et al., 2022; Ghifary & Lastati, 2024). However, empirical evidence remains inconclusive, as several studies report negative or insignificant effects, suggesting that the relationship is highly contextual and influenced by industry characteristics as well as prevailing tax regulations (Prastyo et al., 2024; Widayu & Venusita, 2024). Similarly, the influence of profitability on tax planning demonstrates ambivalent empirical results. Firms with higher profitability may be incentivized to engage in aggressive tax strategies to protect earnings, yet

they may also avoid such practices to preserve legitimacy and corporate reputation (Lukman & Hartikayanti, 2022; Fitria & Rimet, 2024; Elkaria et al., 2024). Other studies indicate insignificant relationships or highlight the role of ownership structure, particularly foreign ownership, in strengthening tax avoidance tendencies (Wibowo et al., 2024; Putri et al., 2024). These inconsistencies indicate that profitability cannot be viewed as a standalone determinant of tax planning behavior. From a governance perspective, independent commissioners are expected to function as an effective monitoring mechanism to curb managerial opportunism, as explained by agency theory (Jensen & Meckling, 1976; Ramadhan & Larasati, 2022). While several studies confirm their moderating role in reducing aggressive tax planning, others reveal weak or insignificant effects, emphasizing that supervisory effectiveness depends more on governance quality than mere formal compliance (Hutauruk et al., 2025). This inconsistency highlights a clear research gap, particularly within the capital-intensive F&B subsector that operates under substantial fiscal pressure and remains underexplored in prior studies.

Based on this background, this study aims to empirically examine the influence of capital intensity and profitability on tax planning practices in food and beverage (F&B) companies listed on the Indonesia Stock Exchange during the period 2020–2024, as well as to assess the moderating role of independent commissioners in this relationship (Alfian et al., 2022; Fitria & Rimet, 2024). Accordingly, this study is guided by the following research questions: (1) does capital intensity significantly affect tax planning in F&B companies? (2) does profitability influence tax planning behavior? and (3) can independent commissioners effectively moderate the relationship between financial characteristics and tax planning strategies? Theoretically, this research contributes to the empirical testing of agency theory, stakeholder theory, and slack resources theory within a specific industrial context, while practically it offers insights for regulators and corporations in formulating tax planning strategies that balance efficiency, ethics, and fiscal compliance (Serena & Nuswantara, 2024; Hossain et al., 2024).

LITERATURE REVIEW

Agency Theory

Agency theory, as introduced by Jensen & Meckling (1976), explains the contractual relationship between principals and agents, where information asymmetry and differing objectives may give rise to agency conflicts. Managers may exploit their informational advantage by engaging in tax-related strategies, such as utilizing capital intensity or high profit margins, to reduce tax burdens in ways that do not always align with shareholders' long-term interests. The independence of the board of commissioners serves as a governance mechanism to limit such opportunistic behavior and ensure that tax planning remains lawful and aligned with corporate reputation and shareholder protection (Alfian et al., 2022). However, agency theory has been criticized for overemphasizing managerial self-interest and overlooking broader social dimensions, leading Eisenhardt (1989) to argue for the integration of complementary perspectives, which in this study include stakeholder theory and slack resources theory.

Stakeholder Theory

Stakeholder theory (Freeman, 2010) broadens the scope by emphasizing the role of various stakeholders, including shareholders, employees, consumers, the government, and the community, in maintaining corporate sustainability. In this framework, taxes are not only a fiscal obligation but also a form of corporate contribution to the social contract. Companies that are too aggressive in tax planning risk facing a decline in social legitimacy, loss of public trust, and fiscal sanctions. Conversely, proportional tax compliance can strengthen relationships with stakeholders, maintain brand reputation, and increase long-term competitiveness (Elkaria et al., 2024). Thus, stakeholder theory explains why high profits do not always encourage tax avoidance: external pressures can force companies to be more cautious and choose compliance.

Slack Resources Theory

Slack resources theory, introduced by Bourgeois (1981) and further developed by George (2005), highlights how excess resources, whether cash, retained earnings, or fixed assets, provide companies with the flexibility to explore managerial strategies, including tax planning. Companies with large slack resources have the potential to be more aggressive in utilizing tax consultants and devising fiscal efficiency schemes (Chen et al., 2010). However, the direction of slack resource utilization is not uniform. Slack resources theory thus provides a theoretical basis for the relationship between profitability and tax planning. High profits can be a driver or inhibitor of tax avoidance, depending on the effectiveness of governance mechanisms and the industry context (Nuryatun & Mulyani, 2021).

The Relationship between Capital Intensity and Tax Planning

Capital intensity reflects the proportion of fixed assets in a company's asset structure that is directly related to fiscal depreciation policies. From an agency theory perspective, a capital-intensive asset structure provides management with greater discretion to use depreciation expenses as a legal means of reducing taxable income (Jensen & Meckling, 1976; Richardson & Lanis, 2007). In the food and beverage sub-sector, which relies on production machinery and physical facilities, high fixed asset intensity can be a strategic means of tax planning to increase after-tax profits (Prasetyo & Wulandari, 2021; Ghifary & Lastati, 2024).

However, this relationship is not always linear. Social legitimacy pressures and public scrutiny can limit the use of capital intensity as a tax planning tool, especially in companies with high public exposure. Widayu & Venusita (2024) show that capital-intensive companies tend to be more cautious in their tax policies to maintain their reputation and avoid social risks. These differing findings indicate that the influence of capital intensity on tax planning is contextual and influenced by corporate governance and the institutional environment.

H₁ : Capital intensity influences tax planning in Food and Beverage sub-sector companies listed on the IDX.

The Relationship between Profitability and Tax Planning

Profitability reflects a company's ability to generate profits from its resources and determines the amount of tax exposure. Profitability is determined by the amount of profit generated from investments made by the company's capital owners or shareholders (Kustinah, 2019). From the perspective of Slack resources theory, high profits provide excess resources that enable companies to finance more complex and structured tax planning activities (Bourgeois, 1981; Chen et al., 2010). In addition, Agency theory views that managers in companies with high profitability have greater incentives to reduce tax burdens in order to maximize after-tax profits and compensation-based benefits (Jensen & Meckling, 1976; Brigham & Houston, 2021).

Conversely, stakeholder theory asserts that companies with high profit levels face greater legitimacy pressure from the public and regulators, so they tend to avoid aggressive tax practices in order to maintain their reputation and business sustainability (Freeman, 2010; Hanlon & Slemrod, 2009). Empirical findings show mixed results, with Prasetyo et al. (2024) finding a positive relationship between profitability and tax planning, while Rosida & Husnaini (2024) found a negative relationship. This ambiguity confirms that profitability cannot be understood in isolation but must be examined in the context of corporate governance.

H₂ : Profitability affects tax planning in Food and Beverage sub-sector companies listed on the IDX.

The Relationship Between Board of Commissioners Independence and Moderating Capital Intensity on Tax Planning

The independence of the board of commissioners acts as a supervisory mechanism that aims to curb opportunistic behavior by management in the utilization of company assets. In the

context of capital intensity, an independent board is expected to ensure that depreciation policies and the use of fixed assets are not solely directed towards aggressive tax planning, but remain in line with the interests of shareholders and fiscal compliance (Fama & Jensen, 1983; Nuryatun & Mulyani, 2021). With effective monitoring, management's discretion in utilizing asset intensity can be limited. In addition, the existence of an independent board also increases transparency and accountability in strategic decision-making. In manufacturing companies with large fixed assets, board oversight is crucial because investment and depreciation decisions have long-term fiscal implications. Therefore, board independence is expected to weaken the relationship between capital intensity and tax planning, so that the company's tax strategy remains within the corridor of compliance and social legitimacy (Elkaria et al., 2024; Prastyo et al., 2024).

H_{3a}: Board independence moderates the influence of capital intensity on tax planning in Food and Beverage sub-sector companies listed on the IDX.

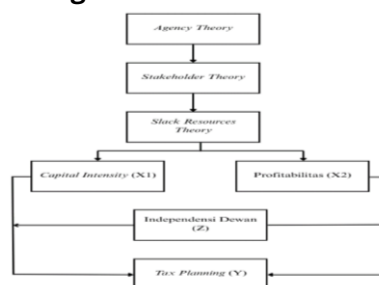
The Relationship Between Board of Commissioners Independence in Moderating Profitability and Tax Planning

Companies with high profitability have greater incentives and capacity to engage in tax planning. However, from the perspective of agency theory, this condition has the potential to increase opportunistic behavior by management if it is not accompanied by adequate oversight mechanisms. An independent board of commissioners serves as a control mechanism to ensure that the profits generated do not encourage high-risk tax strategies or conflict with the interests of minority shareholders (Fama & Jensen, 1983).

Furthermore, from the perspective of stakeholder theory, an independent board plays a role in maintaining the legitimacy of the company by ensuring that tax policies are in line with public and regulatory expectations. Previous studies show that companies with strong board oversight tend to be more conservative in their tax strategies despite having high profitability (Elkaria et al., 2024; Prastyo et al., 2024). Thus, the independence of the board of commissioners is expected to weaken the tendency of high-profit companies to engage in aggressive tax planning.

H_{3b}: The independence of the board of commissioners moderates the influence of profitability on tax planning in Food and Beverage sub-sector companies listed on the IDX.

Figure 1 Frame of Mind



Source : Data processed by researchers (2025)

METHODS

This study adopts a quantitative approach with a causal explanatory research design to examine the effect of capital intensity and profitability on tax planning and to evaluate the moderating role of board independence. The quantitative method is appropriate as it focuses on testing relationships between variables using objectively measurable numerical data, in line with Sugiyono (2020), who states that quantitative research aims to test hypotheses through statistical analysis to allow for generalization. The research population consists of all food and beverage sub-sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–

2024 period, with samples selected using purposive sampling based on the availability and completeness of data on fixed assets, profitability, tax payments, and board of commissioners structure.

Table 3 Sampling Criteria

No	Remarks	Quantity
1.	Food and beverage subsector companies listed on the Indonesia Stock Exchange in the observation period (2020-2024)	83
2.	Companies that suffered losses during 2020-2024	(25)
3.	Companies that publish financial statements that have been audited in full for 2020-2024	(4)
4.	Companies that do not provide information related to Income Tax Payments in the Cash Flow Statement	(12)
5.	Companies affected by delisting or suspension during the 2020-2024 period	(4)
6.	Companies that do not provide information related to the list of Independent Board of Commissioners in the Notes to the Financial Statements.	(4)
Total Research Sample		34
Research Period 2020 – 2024		5
Final Sample Count		170

Source : Data processed by researchers (2025)

Based on Table 3, the final sample consisted of 34 companies, resulting in 170 firm-year observations. The research data were obtained from audited annual financial statements and company annual reports published on the official IDX website and respective company websites. Data collection employed documentation techniques, as the audited and publicly available data are objective, verifiable, and appropriate for empirical analysis.

Dependent Variable (Y): Tax planning

The dependent variable in this study is tax planning, proxied by the Cash Effective Tax Rate (CETR), which reflects the extent of tax planning through the comparison of cash income tax payments to pre-tax income. A lower CETR indicates a higher level of tax planning, as it suggests management's efforts to legally minimize tax burdens in order to enhance profit efficiency. The CETR is calculated using the following formula:

$$\text{CETR} = \frac{\text{Cash Income Tax Payments}}{\text{Profit Before Tax}}$$

Capital intensity (X1)

Capital intensity (X1) is proxied by the ratio of fixed assets to total assets. This ratio indicates the extent to which a company invests in fixed assets, such as machinery, buildings, and production equipment, which has implications for depreciation expenses. The formula is:

$$\text{Capital intensity} = \frac{\text{Total Fixed Assets}}{\text{Total Assets}}$$

Profitability (X2)

Profitability (X2) is proxied using Return on Assets (ROA), which measures a company's ability to generate profits from its total assets. The higher the ROA value, the more effective the company is in utilizing its assets to generate profits, which can have implications for management's tendency to engage in tax planning. ROA is calculated using the formula:

$$\text{Return on Assets} = \frac{\text{Net Income After Tax}}{\text{Total Assets}}$$

Moderating Variable (Z): Independence of the Board of Commissioners

The moderating variable in this study is board independence, proxied by the proportion of independent commissioners to the total number of commissioners. A higher proportion of independent commissioners indicates stronger oversight, which is expected to limit opportunistic managerial behavior, including aggressive tax planning, and enhance corporate governance. The measurement formula is as follows:

$$\text{Board Independence} = \frac{\text{Total Independent Board Members}}{\text{Total Board Members}} \times 100\%$$

Data analysis in this study was conducted using SPSS 27.0 through several stages, including descriptive statistics, classical assumption tests, and Moderated Regression Analysis (MRA) to examine both the direct effects and the moderating role of board independence. The coefficient of determination was employed to assess the model's explanatory power, while t-tests and F-tests were used to evaluate partial and simultaneous effects. The study utilized secondary data collected from audited annual reports and financial statements of food and beverage sub-sector companies listed on the Indonesia Stock Exchange (IDX) for the 2020–2024 period, obtained through a documentation method to ensure data validity and reliability. Variable measurement applied ratio scales based on established operational definitions, with capital intensity measured by fixed assets to total assets, profitability by Return on Assets (ROA), tax planning by Cash Effective Tax Rate (CETR), and board independence by the proportion of independent commissioners, with all data systematically extracted and calculated to ensure consistency and accuracy prior to analysis.

RESULTS

Descriptive Statistical Analysis

Table 4 Descriptive Statistical Analysis

Descriptive Statistics					
	N	Minimum	Maximum	Red	Std. Deviation
Capital intensity	170	0,0229	0,7629	0,353437	0,1680394
Profitability	170	0,0018	0,3431	0,098522	0,0652818
Tax planning	170	-2,6809	2,6809	0,000000	0,9929438
Board independence	170	0,2500	0,6000	0,385966	0,0686314
Valid N (listwise)	170				

Source : Data processed by researchers (2025)

Table 4 shows the results of descriptive analysis of four research variables, namely Capital intensity, Profitability, Tax planning, and Board independence, with a total sample of 170 observations. The Capital Intensity variable describes the proportion of a company's investment in fixed assets compared to its total assets. Based on descriptive statistics, Capital Intensity has a minimum value of 0.0229 and a maximum of 0.7629, with an average (mean) value of 0.3534. This means that, in general, companies in the research sample allocate around 35.34% of their total assets to fixed assets such as machinery, buildings, and production equipment. The standard deviation value of 0.1680 indicates a relatively moderate level of data dispersion, which means that the differences in fixed asset intensity between companies are not too extreme. Companies with high Capital Intensity values tend to have capital-intensive asset structures, so

they have the potential to obtain tax benefits in the form of depreciation expenses that can reduce taxable income. Conversely, companies with low Capital Intensity show a dominance of current assets, which generally have higher operational flexibility but relatively limited opportunities for tax savings through depreciation. Thus, Capital Intensity is an important indicator in analyzing its relationship with corporate tax planning policies.

The Profitability variable reflects a company's ability to generate profits from its resources. The analysis shows that profitability has a minimum value of 0.0018 and a maximum value of 0.3431, with an average value of 0.0985. This indicates that, on average, companies are able to generate profits of around 9.85% of their total assets, which reflects fairly good financial performance. The standard deviation of 0.0653 shows that the variation in profitability levels between companies is relatively low, so that the financial performance of companies in the sample tends to be stable. Companies with high profitability generally face a greater tax burden due to an increase in taxable income, so they have a stronger incentive to optimize their tax planning. Conversely, companies with low profitability have more limited scope in managing their tax burden because their profits are relatively small. Therefore, profitability is often seen as a major driving factor in corporate tax strategy decisions.

The Tax Planning variable represents management's efforts to legally manage tax obligations in order to minimize the company's tax burden. Based on descriptive statistics, this variable has a minimum value of -2.6809 and a maximum value of 2.6809, with an average value close to 0.0000 and a relatively high standard deviation of 0.9929. The average value close to zero indicates that, in aggregate, the companies in the sample did not engage in extreme tax aggressiveness or tax conservatism. However, the high standard deviation indicates significant differences in tax planning strategies between companies. Some companies exhibit intensive tax planning practices, while others tend to be more compliant and conservative with regard to tax regulations. The Board Independence variable reflects the proportion of independent commissioners in the company's board of commissioners structure. Statistical results show a minimum value of 0.2500 and a maximum of 0.6000, with an average of 0.3860. This means that on average, around 38.6% of board members are independent commissioners, which meets capital market regulations regarding the implementation of good corporate governance principles. The standard deviation of 0.0686 shows that the proportion of independent commissioners is relatively homogeneous across companies. A high level of board independence is expected to improve the oversight function of management policies, including decisions related to tax planning. With independent commissioners, the potential for opportunistic behavior by management in exploiting tax loopholes can be minimized, so that tax policies are more in line with the principles of prudence and compliance with applicable regulations.

In general, the results of the descriptive analysis show that the sample companies have fairly stable financial characteristics, with the greatest variation found in the Tax planning variable. This indicates that tax planning practices are highly dependent on internal policies and the specific characteristics of each company. Meanwhile, the variables of Capital intensity, Profitability, and Board Independence show relatively homogeneous data distribution, reflecting financial conditions and governance that tend to be uniform in the sector studied.

Normality Test

Table 5 Normality Test

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			170
Normal Parameters^{a,b}	Red		0,0000000
	Std. Deviation		0,93725508

Most Extreme Differences	Absolute		0,040
	Positive		0,026
	Negative		-0,040
Test Statistic			0,040
Asymp. Sig. (2-tailed) ^c			.200d
Monte Carlo Sig. (2-tailed) ^e	Sig.		0,725
	99% Confidence Interval	Lower Bound	0,713
		Upper Bound	0,736

Source : Data processed by researchers (2025)

Based on the Kolmogorov-Smirnov normality test, the Asymp. Sig. (2-tailed) value of 0.200 and the Monte Carlo Sig. (2-tailed) value of 0.725 were both greater than 0.05, indicating that the residuals are normally distributed. The mean residual value of 0.0000 and a standard deviation of 0.9373 show that deviations from the actual data are minimal and within an acceptable range, while the low most extreme difference (absolute = 0.040) further confirms a symmetrical and near-normal distribution. These results demonstrate that the regression model satisfies the normality assumption and is appropriate for subsequent hypothesis testing.

Multicollinearity Test

Table 6 Multicollinearity Test

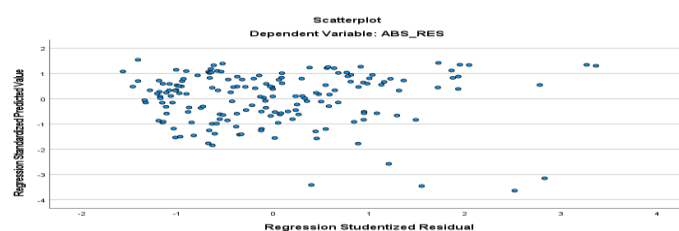
Coefficient			
Models		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	<i>Capital intensity</i>	0,949	1,054
	Profitability	0,994	1,006
	Board independence	0,951	1,051

Source : Data processed by researchers (2025)

Based on the multicollinearity test results, the tolerance values for capital intensity, profitability, and board independence are 0.949, 0.994, and 0.951, respectively, while the corresponding VIF values are 1.054, 1.006, and 1.051. All tolerance values exceed 0.10 and all VIF values are below 10, indicating no multicollinearity among the independent variables. This suggests that each variable contributes uniquely to the regression model without overlapping information, and the model satisfies the classical multicollinearity assumption, making it suitable for reliable hypothesis testing.

Heteroscedasticity Test

Figure 2 Heteroscedasticity Test



Source : Data processed by researchers (2025)

Based on the scatterplot between Studentized Residual Regression and Regression Standardized Predicted Value (ABS_RES), it can be seen that the data points are scattered randomly above and below the zero line and do not form a specific pattern, such as a fan pattern (widening or narrowing) or a systematic wave pattern. The residual distribution appears relatively constant across various predicted values, although there are several extreme points (outliers), but there is no clear tendency for an increase or decrease in residual variance. Thus, descriptively, it can be concluded that there is no indication of strong heteroscedasticity in this regression model, so the assumption of homoscedasticity can be said to be fulfilled.

Autocorrelation Test

Table 7 Autocorrelation Test

Model Summary ^b					
Models	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.330a	0,109	0,093	0,9456863	1,687

Source : Data processed by researchers (2025)

Based on the autocorrelation test, the Durbin-Watson (DW) value of 1.687 falls within the acceptable range of 1.5 to 2.5, indicating no autocorrelation in the regression model. This result suggests that the residuals are independent and uncorrelated across observations, fulfilling the classical assumption of autocorrelation. Consequently, the regression model produces efficient and unbiased estimates and is suitable for further hypothesis testing.

Moderated Regression Analysis (MRA)

Table 8 Moderated Regression Analysis (MRA)

Coefficient						
Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0,103	1,302		0,079	0,937
	<i>Capital intensity</i>	-1,690	3,124	-0,286	-0,541	0,589
	Profitability	-1,354	6,634	-0,089	-0,204	0,838
	Board Independence	1,429	3,279	0,099	0,436	0,664
	X1XZ	2,918	8,348	0,182	0,350	0,727
	X2XZ	-8,216	16,728	-0,224	-0,491	0,624

Source : Data processed by researchers (2025)

Based on the results of the Moderated Regression Analysis (MRA) in the table above, it can be seen that the interaction variable between Capital intensity and Board Independence (X1XZ) has a significance value of 0.727, while the interaction between Profitability and Board Independence (X2XZ) has a significance value of 0.624. Both values are greater than the significance level of 0.05, so it can be concluded that Board Independence is unable to moderate the relationship between Capital Intensity and Profitability on the dependent variable. In addition, the main variables of Capital Intensity (Sig. = 0.589), Profitability (Sig. = 0.838), and Board Independence (Sig. = 0.664) also show significance values above 0.05, which means that each variable does not have a significant direct effect on the dependent variable in the moderation model. The regression coefficients that appear in the interaction (B = 2.918 for X1XZ

and $B = -8.216$ for $X2XZ$) show different directions of relationship, but because they are not significant, these effects cannot be used as a basis for statistical relationships. Thus, it can be concluded that Board Independence does not act as a moderating variable in the relationship between Capital Intensity and Profitability and the dependent variable, and the moderation model does not show a significant effect in this analysis.

T test (Partial test)

Table 9 T test

Coefficient				
Models		Standardized Coefficients	t	Sig.
		Beta		
1	(Constant)		0,079	0,937
	<i>Capital intensity</i>	-0,286	-0,541	0,589
	Profitability	-0,089	-0,204	0,838
	Board Independence	0,099	0,436	0,664
	$X1XZ$	0,182	0,350	0,727
	$X2XZ$	-0,224	-0,491	0,624

Source : Data processed by researchers (2025)

Based on the t-test results in the coefficient table, the Capital intensity variable shows a significance value of 0.589, which is above the significance level of 0.05. In addition, the beta coefficient value of -0.286 indicates a negative effect on tax planning, although this effect is not statistically significant. Thus, the first hypothesis (H1), which states that capital intensity affects tax planning in food and beverage sub-sector companies listed on the IDX for the 2020–2024 period, is rejected. This means that the level of corporate investment in fixed assets is not proven to affect the tax planning practices carried out by companies in the research period.

Furthermore, for the Profitability variable, a significance value of 0.838 was obtained, which is also above the significance value of 0.05. A beta value of -0.089 indicates a negative effect on tax planning, but as with capital intensity, this effect is not significant. With these results, the second hypothesis (H2), which states that profitability affects tax planning in food and beverage companies listed on the IDX for the 2020–2024 period, is rejected. This shows that the level of company profits is not a factor that influences companies' decisions in tax planning.

The first interaction variable, Capital Intensity moderated by Board Independence ($X1XZ$), shows a significance value of 0.727. This value is well above the 0.05 threshold, indicating that the interaction is not significant and that board independence does not strengthen or weaken the influence of capital intensity on tax planning. Thus, the third hypothesis (H3a), which states that Board Independence moderates the relationship between Capital Intensity and Tax Planning, is rejected. This means that the presence of independent commissioners in the governance structure does not play a role in controlling or influencing the impact of asset investment on a company's tax planning practices. For the second interaction variable, namely Profitability moderated by Board Independence ($X2XZ$), a significance value of 0.624 was obtained, which is also above 0.05. This means that board independence does not play a role as a moderating variable in the relationship between profitability and tax planning. Thus, the fourth hypothesis (H3b), which states that Board Independence moderates the relationship between Profitability and Tax Planning, is rejected. These results indicate that the proportion of independent commissioners in the board structure does not affect the relationship between profitability and the company's tax planning decisions. Overall, neither the direct effect nor the interaction of independent variables on tax planning is proven to be significant in this research model.

F Test (Simultaneous Test)**Table 10 Test F**

ANOVA ^a						
Models		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18,468	5	3,694	4,089	.002b
	Residual	148,156	164	0,903		
	Total	166,623	169			

Source : Data processed by researchers (2025)

Based on the F test results in the ANOVA table above, a calculated F value of 4.089 was obtained with a significance level (Sig.) of 0.002, which is smaller than the significance threshold of 0.05. This indicates that the regression model used is simultaneously significant, so it can be concluded that all independent variables in the model, namely Capital intensity, Profitability, Board Independence, and interaction variables (X1XZ and X2XZ), jointly affect Tax planning. Thus, the null hypothesis stating that all independent variables do not simultaneously affect the dependent variable is rejected.

Coefficient of Determination (R²)**Table 11 Coefficient of Determination**

Model Summary ^b					
Models	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.333a	0,111	0,084	0,9504677	1,681

Source : Data processed by researchers (2025)

Based on the results of the coefficient of determination (R²) test in the Model Summary table, an R Square value of 0.111 or 11.1% was obtained, indicating that the independent variables in the research model, namely Capital intensity, Profitability, Board Independence, and interaction variables (X1XZ and X2XZ), together explain 11.1% of the variation in the dependent variable Tax planning. Meanwhile, 88.9% of the variation in Tax planning is influenced by other factors outside this research model, such as leverage, company size, ownership structure, tax policy, and other managerial factors. The Adjusted R Square value of 0.084 indicates that after adjusting for the number of independent variables and sample size, the model's ability to explain the variation in Tax planning is still relatively low but remains consistent. Thus, even though the regression model is statistically significant, the model's explanatory power for Tax planning is still limited.

DISCUSSION**The Effect of Capital Intensity on Tax Planning**

The t-test results show that capital intensity has a significance value of 0.589 > 0.05, so it can be concluded that capital intensity does not have a significant effect on tax planning in food and beverage sub-sector companies on the IDX for the 2020–2024 period. The negative beta coefficient value (-0.286) indicates that an increase in the portion of fixed assets tends to reduce tax planning activities. However, because the test results are not significant, this effect cannot be generalized. This finding shows that the amount of fixed asset investment that generates depreciation costs is not always used as a means to reduce tax burdens.

These results are in line with the research by *Widayu & Venusita (2024)*, which found that capital intensity does not affect tax planning because companies focus more on using assets to support business operations than as a tax saving instrument. This may occur because the

depreciation of fixed assets is only one small factor that affects a company's tax burden, while tax planning strategies are often influenced by internal company policies and tax regulation opportunities. Conversely, the results of this study differ from the findings of *Komalasari & Lestari* (2024) and Alfian et al. (2022), who stated that the higher the capital intensity, the higher the company's ability to utilize fixed asset depreciation as a deduction from taxable income. This difference in results may be due to different industry characteristics, varying asset structures, and company policies in managing tax strategies. Thus, in the context of this study, capital intensity is not a determining factor in tax planning.

The Effect of Profitability on Tax Planning

The profitability variable obtained a significance value of $0.838 > 0.05$, which means that profitability does not affect tax planning. The beta coefficient value (-0.089) shows a negative direction, but because it is not significant, this indicates that the level of company profits does not sufficiently influence companies' decisions in conducting tax planning in the food and beverage sub-sector on the IDX. This study is consistent with the findings of Fitdra & Inayati (2022), which state that profitability does not always affect tax planning because companies with high profits tend to maintain their reputation and tax compliance to avoid the risk of tax inspections or legal sanctions. However, these findings differ from the research by Rudyanto et al. (2023), which found that profitability has a positive effect on tax avoidance because the greater the profit, the greater the incentive for companies to minimize the taxes they pay. This difference shows that the effect of profitability on tax planning is highly dependent on management strategies and corporate governance policies in managing tax risks and compliance.

The Role of Board Independence in Moderating the Relationship between Capital Intensity and Tax Planning

The MRA test results show that the interaction between Capital Intensity $\times$ Board Independence ($X1XZ$) has a significance value of $0.727 > 0.05$, meaning that board independence is unable to moderate the relationship between capital intensity and tax planning. This means that the presence of independent commissioners neither strengthens nor weakens this relationship. In practice, the presence of independent commissioners does not necessarily involve them in the operational details of asset management strategies, including decisions related to fixed asset investments. This result is in line with Fitria & Rimet (2024), who state that the role of independent commissioners is more focused on monitoring the company's overall risk and compliance, rather than on technical policies such as the use of fixed assets as a means of tax planning. In food and beverage sub-sector companies, which tend to be capital intensive, asset investment decisions are made based on production needs, not on tax planning opportunities.

However, these results differ from Alfian et al. (2022), who found that board independence can suppress tax avoidance practices due to stronger oversight mechanisms in corporate governance (Good Corporate Governance). In this study, board independence did not show a moderating effect, meaning that the presence of independent commissioners has not been able to optimize the oversight function related to corporate tax policy.

The Role of Board Independence in Moderating the Relationship between Profitability and Tax Planning

The MRA results show a significance value for the interaction between Profitability $\times$ Board Independence ($X2XZ$) of $0.624 > 0.05$, which means that board independence does not moderate the relationship between profitability and tax planning. Thus, regardless of a company's profitability level, the presence of independent commissioners cannot be a factor that strengthens or weakens the possibility of a company engaging in tax planning. Independent

commissioners function more as compliance and reporting supervisors, rather than operational decision makers related to tax strategy. These results are in line with the research by Prastyo et al. (2024), which found that board independence in some industries is ineffective in controlling tax policy because independent commissioners often do not have sufficient detailed operational information related to tax management.

However, these results are inconsistent with the study by Ramadhan & Larasati (2022), which states that board independence can play a role in reducing tax avoidance practices due to its function as a representative of minority shareholders' interests. However, based on the results of this study, board independence does not show a moderating role, which means that its existence cannot yet ensure that companies manage taxes more transparently and carefully.

CONCLUSION

Based on empirical analysis of food and beverage companies listed on the Indonesia Stock Exchange from 2020 to 2024, this study concludes that capital intensity and profitability do not significantly affect tax planning, either partially or in a moderation model. These findings indicate that the proportion of fixed assets and the company's profit level are not directly the main determinants of tax planning practices. Furthermore, the results of Moderated Regression Analysis (MRA) prove that the independence of the board of commissioners is unable to moderate the relationship between capital intensity and profitability on tax planning, indicating that the supervisory function of the independent board in this sub-sector is not yet effective in influencing corporate taxation policies. Simultaneously, the regression model is significant, but the relatively low coefficient of determination suggests that tax planning decisions are more influenced by managerial factors and the broader corporate governance context, rather than solely by internal financial characteristics.

LIMITATION

This study has several limitations that need to be considered. First, the variables used are limited to capital intensity, profitability, and board independence, so the model's explanatory power for tax planning variations is still low and does not cover other potentially more dominant factors such as leverage, company size, institutional ownership, corporate social responsibility, and managerial policies. Second, the research object is only focused on the food and beverage sub-sector with an observation period of 2020–2024, so the research results cannot be generalized to other industrial sectors. Third, tax planning is measured using only one proxy, namely the Cash Effective Tax Rate (CETR), which, although it reflects real cash-based taxes, does not fully capture the complexity of corporate tax planning strategies. Therefore, further research is recommended to expand the variables, sectors, and period, as well as to use more than one tax planning indicator in order to obtain more comprehensive results.

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