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The Effect of Leverage, Sales Growth, and Capital Intensity on Tax Avoidance

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ABSTRACT

This study examines the effects of leverage, sales growth, and capital intensity on tax avoidance in food and beverage manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2019–2023. Fourteen companies were selected by purposive sampling, yielding 70 firm-year observations. Tax avoidance is measured by the cash effective tax rate (CETR), for which a lower value indicates more tax avoidance. The data were analyzed with multiple linear regression in SPSS version 26. Leverage has a significant positive effect on CETR, indicating that more highly leveraged companies engage in less tax avoidance. Sales growth has a significant negative effect on CETR, indicating that faster-growing companies engage in more tax avoidance. Capital intensity has no significant effect at the 5% level.

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Introduction

As a developing nation, Indonesia relies largely on taxes as its main source of government revenue. Taxes are essential for maintaining economic stability, providing public facilities, and funding national development.

Ministry of Finance data show that state revenue and tax collections increased from 2019 to 2023, despite a decline in 2020 caused by the pandemic (Figure 1). However, Indonesia's tax revenues have not yet reached their potential, as reflected in the low tax ratio, which did not reach 11% during 2019–2023 and peaked at 10.38% in 2022. This figure is relatively low compared with the global average of 15.06% reported by the World Bank, even though Indonesia's tax potential is large given its population and continued growth in business activity (Setiawan & Sunarmi, 2024).

Tax revenue is crucial for financing development and economic growth, but tax avoidance by

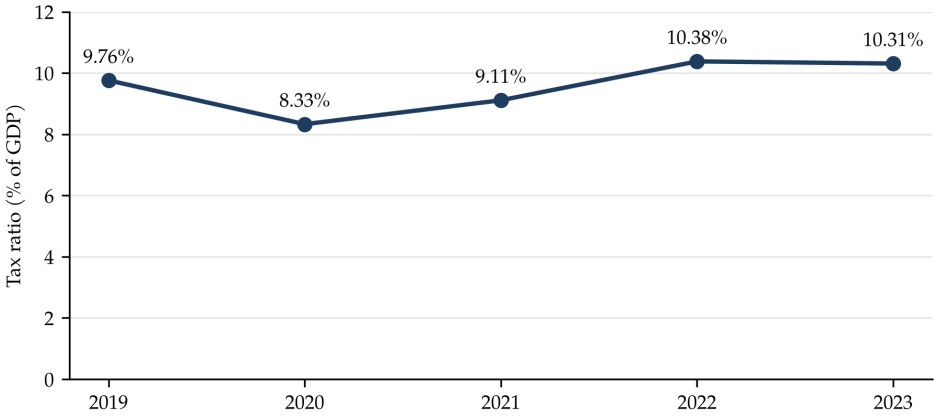


Figure 1. Indonesia's Tax Ratio, 2019–2023 (Source: Ministry of Finance, https://www.kemenkeu.go.id)

companies and individual taxpayers remains a major obstacle to optimizing it. The differing interests of the government, which seeks to maximize revenue, and companies, which view taxes as a burden, lead to non-compliance, as explained by agency theory (Jensen & Meckling, 1976; Suranta et al., 2021). In a corporate context, tax avoidance can be considered a legal strategy for reducing tax liabilities by exploiting loopholes in tax regulations, yet it still reduces state revenue. A report by the Tax Justice Network estimated that Indonesia loses approximately Rp68.7 trillion in tax revenue annually because of this practice, largely carried out by multinational companies through profit shifting to low-tax jurisdictions (Amelia, 2023).

The food and beverage industry is one of Indonesia's largest manufacturing industries and an important source of tax revenue, yet several companies in this industry have been linked to tax avoidance. For example, PT Indofood Sukses Makmur Tbk was alleged to have avoided Rp1.3 billion in taxes by transferring assets and business activities to a subsidiary, PT Unilever Indonesia Tbk was reported to have reduced its tax burden through transfer pricing, and PT Coca-Cola Indonesia was alleged to have underpaid Rp49.24 billion in taxes between 2002 and 2006 by inflating marketing costs, which reduced its taxable income (Febriyanti, 2022). These cases show that tax avoidance strategies that reduce state revenue are still widely used.

Tax avoidance is influenced by various factors, including leverage, sales growth, and capital intensity. Leverage refers to the extent to which a company finances its assets with debt. Because interest expenses are deductible from taxable income, companies with more debt have an opportunity to reduce their tax burden. Sales growth, while bringing greater profits, also increases tax liabilities, which may prompt companies to seek ways to reduce their tax obligations. Capital intensity reflects a company's investment in fixed assets; depreciation of these assets is deductible from taxable income, which lowers the tax burden.

Research Gap and Novelty

Previous findings on these determinants are inconsistent. Prayoga and Sumantri (2023) and Pratiwi et al. (2021) found that leverage has a positive effect on tax avoidance, whereas Susan and Faizal (2023), Angelina and Melatnebar (2024), Tobing et al. (2022), and Gumono (2021) found no effect. Susan and Faizal (2023), Alfarasi and Muid (2022), and Pratiwi et al. (2021) found that sales growth has a positive effect on tax avoidance, whereas Prayoga and Sumantri (2023), Firmansyah and Bahri (2023), and Rasyid et al. (2023) found no effect. Susan and Faizal (2023), Rahmadani et al. (2023), and Rasyid et al. (2023) found that capital intensity

has a positive effect on tax avoidance, whereas Ismawati and Fauzan (2022), Firmansyah and Bahri (2023), and Dewi and Oktaviani (2021) found no effect. This study re-examines these three determinants in food and beverage manufacturing companies listed on the IDX during 2019–2023, a period that includes the COVID-19 pandemic and the subsequent recovery.

Literature Review and Hypotheses Development

Agency theory holds that managers may act in their own or shareholders' interests at the expense of other parties, including the state as tax collector (Jensen & Meckling, 1976). Interest on debt is a deductible expense under Law No. 36 of 2008 on Income Tax, so companies with higher leverage have greater opportunity to reduce taxable income (Prayoga & Sumantri, 2023; Pratiwi et al., 2021).

H1: Leverage has a positive effect on tax avoidance.

Companies with growing sales tend to earn higher profits and therefore face higher tax liabilities, which increases their incentive to engage in tax planning (Alfarasi & Muid, 2022; Susan & Faizal, 2023).

H2: Sales growth has a positive effect on tax avoidance.

Depreciation of fixed assets reduces taxable income; therefore, companies with more fixed assets have greater opportunity to reduce their tax burden (Rasyid et al., 2023; Susan & Faizal, 2023).

H3: Capital intensity has a positive effect on tax avoidance.

Method

Research Design

This study uses a quantitative approach to examine the effects of leverage, sales growth, and capital intensity on tax avoidance. The secondary data were obtained from the annual reports and financial statements available on the Indonesia Stock Exchange website (https://www.idx.co.id) and on each company's website. The population consists of food and beverage manufacturing companies listed on the IDX during 2019–2023.

Variable Measurement

Table 1 explains how the variables are measured.

Data Analysis

The data were analyzed with multiple linear regression in SPSS version 26, and the hypotheses were tested with the t test at the 5% significance level. The research model is:

$$CETR_{it} = \alpha + \beta_1 LEV_{it} + \beta_2 SG_{it} + \beta_3 CI_{it} + \varepsilon_{it}$$

Because a lower CETR indicates more tax avoidance, a *negative* coefficient indicates that a variable *increases* tax avoidance, and a positive coefficient indicates that it reduces tax avoidance.

Table 1. Variable Measurement

Variable	Definition	Indicator	Scale
Tax avoidance (Y)	Efforts to reduce or minimize tax obligations by exploiting gaps in tax regulations	$CETR = \frac{\text{Cash tax paid}}{\text{Profit before tax}}$; a lower CETR indicates more tax avoidance	Ratio
Leverage (X1)	The proportion of a company's assets financed by debt, which reflects its sources of funds and financial risk	$DAR = \frac{\text{Total debt}}{\text{Total assets}}$	Ratio
Sales growth (X2)	The year-over-year increase in sales, which reflects a company's ability to expand its operations	$\frac{\text{Net sales}_t - \text{Net sales}_{t-1}}{\text{Net sales}_{t-1}}$	Ratio
Capital intensity (X3)	Investment in fixed assets used for operational activities	$\frac{\text{Total fixed assets}}{\text{Total assets}}$	Ratio

Results

Sample Selection

The sample was selected by purposive sampling, that is, based on criteria relevant to the research objectives (Table 2). Fourteen companies met all criteria, yielding 70 firm-year observations over five years.

Table 2. Sample Selection

No.	Criterion	Number
1	Food and beverage manufacturing companies listed on the IDX during 2019–2023	95
2	Companies not listed consecutively on the IDX during 2019–2023	(70)
3	Companies that published financial reports in currencies other than the rupiah during 2019–2023	(0)
4	Companies that experienced losses during 2019–2023	(7)
5	Outliers	(4)
	Number of sample companies	14
	Number of years	5
	Total observations	70

Multiple Linear Regression Analysis

Table 3. Multiple Linear Regression Results (Dependent Variable: CETR)

Variable	B	Std. error	Beta	t	Sig.
Constant	0.225	0.022		10.246	0.000
Leverage (X1)	0.169	0.062	0.354	2.748	0.008
Sales growth (X2)	−0.192	0.056	−0.375	−3.431	0.001
Capital intensity (X3)	−0.085	0.047	−0.234	−1.791	0.078

Based on Table 3, the estimated regression equation is:

$$\widehat{CETR} = 0.225 + 0.169\,LEV - 0.192\,SG - 0.085\,CI$$

The constant of 0.225 indicates the predicted CETR when leverage, sales growth, and capital intensity are zero. The leverage coefficient of 0.169 indicates that an increase of 0.10 in the debt-to-asset ratio is associated with an increase of about 0.017 in CETR, that is, less tax avoidance, holding the other variables constant. The sales growth coefficient of -0.192 indicates that an increase of 10 percentage points in sales growth is associated with a decrease of about 0.019 in CETR, that is, more tax avoidance. The capital intensity coefficient of -0.085 is negative but not significant at the 5% level.

Hypothesis Testing

Hypotheses are evaluated using the significance values in Table 3; with 66 degrees of freedom, the critical two-tailed t value at the 5% level is 1.997.

- **H1.** Leverage has a significant positive effect on CETR ($t = 2.748$, Sig. $= 0.008$). Because a higher CETR indicates less tax avoidance, leverage significantly *reduces* tax avoidance. This is opposite to the hypothesized direction; therefore, H1 is rejected.
- **H2.** Sales growth has a significant negative effect on CETR ($t = -3.431$, Sig. $= 0.001$). Because a lower CETR indicates more tax avoidance, sales growth significantly *increases* tax avoidance; therefore, H2 is accepted.
- **H3.** Capital intensity has no significant effect on CETR at the 5% level ($t = -1.791$, Sig. $= 0.078$); therefore, H3 is rejected.

Discussion

The Effect of Leverage on Tax Avoidance

The results show that companies with higher leverage, measured by the debt-to-asset ratio, have a higher CETR and thus engage in less tax avoidance. Although interest on debt to unaffiliated parties is deductible under Law No. 36 of 2008, debt also brings closer monitoring by creditors, who require transparent reporting and prudent financial behavior; from the perspective of agency theory, debt acts as a monitoring mechanism that limits managerial discretion (Jensen & Meckling, 1976). Highly leveraged companies may therefore avoid aggressive tax strategies that could raise their perceived risk in the eyes of lenders. This finding differs from Prayoga and Sumantri (2023) and Pratiwi et al. (2021), who found that leverage increases tax avoidance, and from Susan and Faizal (2023), Angelina and Melatnebar (2024), Tobing et al. (2022), and Gumono (2021), who found that leverage has no effect.

The Effect of Sales Growth on Tax Avoidance

The results show that companies with higher sales growth have a lower CETR and thus engage in more tax avoidance. Companies with growing sales earn higher profits and face higher tax liabilities, which increases their incentive to engage in tax planning; growing companies also tend to have more resources to finance such planning. This finding is consistent with Susan and Faizal (2023), Alfarasi and Muid (2022), and Pratiwi et al. (2021), who found that sales growth has a positive effect on tax avoidance, but differs from Tobing et al. (2022), Rahmadani et al. (2023), and Amelia (2023), who found a negative effect, and from Prayoga and Sumantri (2023), Firmansyah and Bahri (2023), and Rasyid et al. (2023), who found no effect.

The Effect of Capital Intensity on Tax Avoidance

The results show that capital intensity has no significant effect on tax avoidance at the 5% level. Although depreciation of fixed assets reduces taxable income, companies invest in buildings, machinery, and equipment primarily to support operations and increase production capacity, and they depreciate these assets in accordance with applicable accounting standards rather than to reduce taxes. Companies may also avoid the reputational and legal risks associated with aggressive tax strategies. This finding is consistent with Ismawati and Fauzan (2022), Firmansyah and Bahri (2023), and Dewi and Oktaviani (2021), who found that capital intensity has no significant effect on tax avoidance, but differs from Susan and Faizal (2023), Rahmadani et al. (2023), and Rasyid et al. (2023), who found a positive effect.

Conclusion and Recommendation

Based on the results and discussion, the following conclusions can be drawn:

1. Leverage has a significant positive effect on CETR, which means that more highly leveraged companies engage in less tax avoidance; therefore, H1 is rejected.
2. Sales growth has a significant negative effect on CETR, which means that faster-growing companies engage in more tax avoidance; therefore, H2 is accepted.
3. Capital intensity has no significant effect on tax avoidance at the 5% level; therefore, H3 is rejected.

For tax authorities, the findings suggest that companies with rapid sales growth deserve closer attention in tax supervision. Future research is encouraged to include additional variables, to examine other sectors such as finance and other industries, and to use a longer observation period. Because the data combine 14 companies over five years, future studies should also use panel data estimators or cluster-robust standard errors and report the simultaneous test and coefficient of determination.

Authors' Declaration

The authors made substantial contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation, and discussion of the results. The authors read and approved the final manuscript.

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