The effect of transfer pricing, thin capitalization, deferred tax, and inventory intensity on tax avoidance

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Abstract

Purpose: This study aims to determine the effect of transfer pricing, thin capitalization, deferred tax, and inventory intensity on tax avoidance.

Method: This study uses a quantitative approach with a sample consisting of all companies listed on the Indonesia Stock Exchange (BEI) from 2018 to 2022. A purposive sampling technique was used for sample selection, and a sample of 107 companies was obtained. This study uses panel data analysis.

Result: The results of the analysis show that thin capitalization and deferred taxes have a negative effect on tax avoidance, while transfer pricing and inventory intensity have no effect on tax avoidance.

Keywords: Transfer Pricing, Thin Capitalization, Deferred Taxes and Tax Avoidance


1. Introduction

The role of taxes as a source of state income for Indonesia can be seen from their proportion in State Revenue and Grants. Based on data from the Central Government Financial Report (LKPP) from 2018 to 2022, taxes contribute 77.0% to 78.9% of state revenue. The remainder was contributed by Non-Tax State Revenue (PNBP) and grants. From these data, it can be concluded that our country is highly dependent on taxes as a source of state income.

Previous research shows that tax avoidance is influenced by various factors. These factors are related to executive characteristics (Efendi, Muawanah, & Setia, 2022; Muttaqin & Husen, 2020; Pratomo, Nazar, & Pratama, 2022), ownership structure (Al Hasyim, Inayati, Kusbandidyah, & Pandansari, 2023; Alkurdhi & Mardini, 2020; Dakhli, 2022), corporate governance (Supriyati, Hartiyah, & Susanti, 2022; Ubaidillah, 2021; I. Wijaya & Ramadani, 2020), and audit quality (Ardillah & Prasetyo, 2021; Gaaya, Lakhal, & Lakhal, 2017; Prasetyo & Rahmawati, 2022).

In contrast to previous research, this study examines methods that companies use to influence the amount of income tax borne by the company. One of these methods is using transfer pricing (Fasita, Firmansyah, & Irawan, 2022; Panjulsusman, Nugraha, & Setiawan, 2018; Utami & Irawan, 2022; S. Wijaya & Hidayat, 2021), thin capitalization (Fasita et al., 2022; Rini, Dipa, & Yudha, 2022; Salwah & Herianti, 2019; Utami & Irawan, 2022), deferred tax (Akbar, Rinaldi, & William, 2022; Gula & Mulyani, 2020; Jati & Murwaningsari, 2020; Suciarti, Suryani, & Kurnia, 2020), and inventory intensity (Intan & Jati, 2019; Nianzari & Novelia, 2022; Sari & Indrawan, 2022; Yulianty, Khrisnatika, Amrie Firmansyah, & MM, 2021).

Utami and Irawan (2022) state that multinational companies often abuse transfer pricing to evade government supervision by taking advantage of the differences in tax rates between countries, so they can pay lower taxes. In line with this statement, S. Wijaya and Hidayat (2021) found that domestic
companies also take advantage of transfer pricing between companies in the same group to reduce the amount of tax they have to bear.

Another factor that can influence tax avoidance is the use of deferred tax. According to Cahyani and Kiswara (2019), calculating company taxes using a self-assessment system provides companies with an opportunity to calculate their own company taxes. In carrying out tax calculations, companies can use estimated tax calculations that cause differences between commercial and fiscal taxes, which give rise to deferred taxes. Managers can take advantage of this to avoid taxes, thereby reducing a company's tax obligations.

Previous studies have shown varying results. Transfer pricing has been found to positively influence tax avoidance (Utami & Irawan, 2022; S. Wijaya & Hidayat, 2021). Utami and Irawan (2022) used a sample of manufacturing companies from 2016 to 2019. Transfer pricing is measured based on indicators from Taylor and Richardson (2012) and tax avoidance is measured using GAAPETR. Meanwhile, S. Wijaya and Hidayat (2021) conducted observations on agricultural sector companies from 2016 to 2020. Tax avoidance was measured using ETR and transfer pricing was measured using dummy variables for company sales transactions to related parties domiciled in different countries.

Research on the effect of deferred taxes on tax avoidance has shown positive results (Cahyani & Kiswara, 2019). This study used a sample of companies listed on the IDX from 2015 to 2017. This study uses the deferred tax ratio and book tax difference (BTD) to measure tax avoidance. Suciarti et al. (2020) found different results, in their research it was stated that deferred tax had no effect on tax avoidance. The deferred tax is measured by the deferred tax ratio, and tax avoidance is measured using the ETR. This study uses a sample of automotive sector companies for 2012-2018 period.

In contrast to previous research, Gula and Mulyani (2020) and Jati and Murwaningsari (2020) reveal that deferred tax has a negative effect on tax avoidance. Gula and Mulyani (2020) conducted research on consumer goods sector companies for 2014-2018 period while Jati and Murwaningsari (2020) conducted research on manufacturing companies for the 2016-2018 period. Both studies used cash ETR as a proxy for tax avoidance and the deferred tax ratio as a proxy for deferred tax.

The latest aspect of this research is the use of the inventory intensity variable, which is rarely used in the literature as a factor that can influence tax avoidance. Companies with high inventory intensity are thought to have greater opportunities to incur inventory holding costs, which, in turn, can reduce the tax burden. By integrating the inventory intensity variable into the analytical model, this study aims to obtain empirical evidence and analyze the relationship between a company's inventory structure and tax avoidance practices.

In this study, tax avoidance was measured using ETR, as in Dyreng, Hanlon, and Maydew (2010). Transfer pricing is measured using a transfer pricing score as in Amidu et al. Amidu, Coffie, and Acquah (2019). Thin capitalization is measured by DER, as used in Jumailah (2020) research. Deferred tax is measured by the deferred tax expense ratio which refers to research by Phillips, Pincus, and Rego (2003), and measuring inventory intensity using inventory intensity as in Yulianty et al. (2021).

2. Literature review
2.1. Tax evasion
Tax evasion is defined as an unauthorized change or adjustment to avoid or reduce tax obligations (James, 2012). According to Park, Ko, Jung, and Lee (2016), tax evasion is a violation of tax regulations carried out to hide the fact that tax obligations have been fulfilled through acts of fraud or dishonest behavior. Tax evasion also means reducing tax payments by not disclosing actual income or through illegal action (OED, 2023).

The term tax avoidance refers to the behavioral boundary between tax avoidance and tax evasion. Tax avoidance is an important factor in determining legal violations of tax avoidance (Hashimzade &
Epifanteva, 2018). Meanwhile, tax planning is along the imaginary line between tax avoidance and evasion. Tax planning shows how aggressive tax avoidance activities are carried out so that each person can have a different opinion regarding the level of aggressiveness of these actions (Hanlon & Slemrod, 2009).

In this study, the tax avoidance proxy is the effective tax rate (ETR). The use of ETR as a proxy for tax avoidance is based on several previous studies (Dyreng et al., 2010; Taylor & Richardson, 2012). This proxy was chosen because it is easier to calculate and is available in a company's financial reports, making it more practical than other proxies that require additional data that are difficult to obtain (Gupta & Newberry, 1997). ETR is also more resistant to bias from earnings management or accounting manipulation than other proxies such as book-tax differences (Desai & Dharmapala, 2006). In addition, ETR has been widely used and accepted in tax avoidance research, making it easier to compare and generalize research results (Hanlon & Heitzman, 2010).

2.2. Transfer Pricing

Hilton and Platt (2020) defined transfer pricing as the value charged when one division sells goods or services to another. Meanwhile, Liu, Schmidt-Eisenlohr, and Guo (2020) state that transfer pricing is the determination of prices for internal (intra-company) transactions of goods, services, intangible assets and capital flows within multinational companies. This is in line with the definition of transfer pricing in the context of taxation by Feinschreiber (2004), who stated that transfer pricing is the determination of transaction prices between affiliated companies. These transactions may include sales, licenses, rentals, services, and interest.

Previous studies used various proxies to measure transfer pricing. Panjulasman et al. (2018) used the ratio of receivables owned by related parties to the company's total receivables. S. Wijaya and Hidayat (2021) use dummy variables for sales transactions to related parties domiciled in countries with lower tax rates than Indonesia. However, the two measures used in this study do not comprehensively describe transfer pricing.

Therefore, this study uses transfer pricing criteria, as in Amidu et al. (2019), as a proxy for transfer pricing variables. The purpose of selecting this proxy is to determine whether a company has the potential to be involved in abusive transfer pricing practices. Amidu et al. (2019) assigned a score of 1 to companies that met each of the specified criteria. These criteria include the condition of a company if it has a subsidiary located in a tax-haven country, carries out transactions with a subsidiary located in a tax-haven country, has a parent or subsidiary company in a country with a different tax rate other than a tax-haven country, and carries out transactions with related parties, located in countries with different tax rates and royalty payments related to intangible assets between related parties.

2.3. Thin Capitalization

OECD (2015) explains that the way a company meets its capital needs affects the amount of income tax that the company will pay. In general, there are two ways for companies to meet their capital needs: by issuing shares and debt. The difference between the two is that share owners are entitled to a portion of the company's profits obtained through dividends, whereas debt providers are entitled to interest. From a tax perspective, dividends distributed to shareholders cannot be deducted from a company's taxable profits. Meanwhile, interest in debt can be used as a deductible expense to calculate a company's taxable profit (Taylor & Richardson, 2012).

Using the MAD ratio for thin capitalization research in Indonesia is difficult, because publicly traded companies publish only quarterly and annual financial reports. Therefore, it is impossible to calculate the average monthly interest-bearing debt, average non-interest-bearing debt, and average asset value. In addition, the MAD ratio calculation was based on the rules of the 1997 Australian Income Tax Law, which are not necessarily suitable for application in Indonesia. Meanwhile, in Indonesia, based on PMK 169 of 2015, the maximum ratio of debt and capital allowed is 4:1. Based on this, the measurement used as a proxy for thin capitalization in this study is the debt-to-equity ratio (DER) or the comparison between debt and capital. This proxy was also used in Jumailah's (2020) study.
2.4. Deferred Tax
According to PSAK 46, deferred tax assets are the amount of income tax that can be recovered in future periods due to deductible temporary differences, accumulated tax losses that have not been compensated for, and accumulated tax credits that have not been utilized if tax regulations permit. Deferred tax liabilities are the amount of income tax payable in future periods as a result of temporary differences. When journalizing, deferred tax liabilities will be on the debit side, and deferred tax income on the credit side. Meanwhile, deferred tax assets will be on the credit side when journalizing, and deferred tax expenses will be on the debit side.

This study uses the proxy for the deferred tax expense ratio to measure deferred taxes. Phillips et al. used this proxy in their study (Phillips et al., 2003). The same proxy was also used by Cahyani and Kiswara (2019) and Suciarti et al. (2020), Gula and Mulyani (2020), and Jati and Murwaningsari (2020). The deferred tax expense ratio was calculated by comparing the amount of deferred tax at the end of the year with the total assets at the beginning of the year. The total assets at the beginning of the year are assumed to be the same as the total assets of the company at the end of the previous year.

2.5. Inventory Intensity
Inventory intensity is the amount of company ownership of inventory or the amount of investment in inventory made by the company (Putri & Lautania, 2016). Rusdiana (2014) explains that inventory comprises all goods or resources that are stored (stock) for purposes in a company or organization's business processes. Additionally, inventory is an asset that must be available in the company when needed to ensure that the company's operations run smoothly (Rusdiana, 2014).

Rusdiana (2014) divided inventory types into raw materials, goods in process, and finished goods. Raw materials generally refer to all the materials used in production, and the term is usually limited to items that are physically included in the resulting product. Furthermore, work in progress includes goods that have been partially processed, but require further processing before they can be sold. Meanwhile, finished goods are the production results that have been completed and are ready to be sold.

This study uses the inventory intensity ratio proxy to measure inventory intensity, as in Intan and Jati (2019), Sari and Indrawan (2022); Yulianty et al. (2021), Niandari and Novelia (2022). All of these studies use the inventory intensity ratio proxy in their research on tax avoidance in Indonesia. The inventory intensity ratio was calculated by comparing the total inventory with the total company assets for one year. Gupta and Newberry (1997) also used this measurement in their research on factors influencing corporate tax avoidance in the United States.

2.6. Hypothesis Development
2.6.1. The Effect of Transfer Pricing on Tax Avoidance
Transfer pricing is the determination of transaction prices between affiliated companies (Feinschreiber, 2004). Feinschreiber (2004) stated that these transactions can include sales, licenses, rentals, services, and interests. Through transfer pricing, Belianto and Rahayu (2022) state that companies often abuse transfer pricing to evade government supervision by taking advantage of the differences in tax rates between countries so that they can pay lower taxes. Companies tend to move income to countries with low tax rates and shift costs to those with high tax rates (Bhat, 2009).

Research by Utami and Irawan (2022) shows that transfer pricing has a positive effect on tax avoidance. Multinational companies have the opportunity to adjust transaction prices between related entities in different countries to reduce their tax payments. The research results of S. Wijaya and Hidayat (2021) also show that transfer pricing has a positive effect on tax avoidance. This finding can be interpreted as meaning that the company uses the transfer pricing method to actively reduce the amount of tax that it must bear. Referring to this explanation, Hypothesis 1 in this study was determined as follows:

\[ H_1 : \text{Transfer pricing has a positive effect on tax avoidance.} \]

2.6.2. The Effect of Thin Capitalization on Tax Avoidance
The OECD (2015) states that thin capitalization is a situation in which a company is funded with a higher level of debt than capital. From a tax perspective, interest in debt can be used as a deductible
expense to calculate a company's taxable profit (Taylor & Richardson, 2012). The higher the level of thin capitalization, the higher the level of debt the company has and the greater the loan interest that must be paid by the company.

Jumailah (2020) states that the higher thin capitalization has a positive effect on tax avoidance. This is because an increase in thin capitalization results in an increase in interest expenses that must be paid by the company. High interest expenses will reduce company profits, and ultimately, the income tax that must be paid will be lower. The same results were also found in the study by Fasita et al. (2022). The results of the hypothesis test indicate that thin capitalization positively influences tax avoidance. This means that an increase in the portion of debt in the capital structure indicates a company's tendency to engage in tax avoidance activities. Based on this explanation, Hypothesis 2 is as follows:

\[ H_2 : \text{Thin capitalization has a positive effect on tax avoidance.} \]

2.6.3. The Effect of Deferred Taxes on Tax Avoidance

In the stewardship theory developed by Donaldson and Davis (1991), managers have different motivations than those stated in the agency theory. According to stewardship theory, managers are motivated to provide their best in carrying out their duties. In addition, managers also desire to provide optimal services and try to be a valuable asset for the company. Thus, no conflict occurs between the agent and principal because the manager believes that mutual interests and acting in accordance with the interests of the owner are rational considerations for achieving organizational goals. One way to achieve this goal is to avoid tax avoidance activities that can pose a risk of audits and losses caused by tax sanctions in the future.

According to Gula and Mulyani (2020), the greater the difference between fiscal and accounting profits, the greater the management discretion reflected in deferred taxes. Managers can use this discretion to comply with applicable tax regulations, so that companies can avoid potential losses that could occur due to tax avoidance. Jati and Murwaningsari (2020) in their research found that the negative effect of deferred tax on tax avoidance shows a company's compliance with fulfilling its tax obligations. Based on this theory and previous research results, Hypothesis 3 can be formulated as follows:

\[ H_3 : \text{Deferred tax has a negative effect on tax avoidance.} \]

2.6.4. The Effect of Inventory Intensity on Tax Avoidance

Inventory intensity is the amount of company ownership of inventory or the amount of investment in inventory made by the company (Putri & Lautania, 2016). Inventory is required in the production process, but it can also incur additional costs for the company. High inventory intensity can result in warehouse rental costs, insurance costs, labor costs, warehouse security costs, and warehouse equipment costs (Stevenson, Hojati, & Cao, 2014).

Agency theory states that managers act according to their own interests. In this case, managers are suspected of acting opportunistically by taking advantage of the large inventory intensity of the company. The higher the inventory intensity, the higher are the costs that the company must bear. High inventory intensity can cause costs that can reduce company profits. If the profit decreases, the tax burden also decreases, indicating tax avoidance.

Intan and Jati (2019) found that inventory intensity triggers managers’ tax avoidance actions. This condition occurs because of increased costs that must be borne by the company, which then reduces the company's profits. Sari and Indrawan (2022) concluded that companies will try to increase ending inventory, thereby creating additional burdens or costs for the company to reduce net profit and reduce the tax burden. Therefore, Hypothesis 4 is determined as follows:

\[ H_4 : \text{Inventory intensity has a positive effect on tax avoidance.} \]

2.7 Research Framework

This study tests the effect of transfer pricing on tax, as formulated in the first hypothesis (H1). This study also tests the effect of thin capitalization on tax avoidance, as formulated in the second hypothesis (H2). Next, we test the effect of the deferred tax on tax avoidance, as formulated in the third hypothesis
Finally, we test the effect of capital intensity on tax avoidance, as formulated in the fourth hypothesis (H4). The research framework is illustrated in Figure 1.

![Research Framework Diagram]

**Figure 1. Research Framework**

### 3. Research method

#### 3.1. Population and Sample

This study uses the population of all companies listed on the Indonesia Stock Exchange (BEI). Purposive sampling was used in this study. The criteria used were as follows:

2. The company is not in the financial, energy, and infrastructure sectors, as regulated in PMK Number 169 of 2015.
3. The company earns a positive Profit Before Tax.
4. The company consecutively presented annual reports during the research period.
5. The Company presents Financial Reports in Rupiah currency.
6. The company had complete data related to the research variables.

#### 3.2. Data Types and Sources

This research was quantitative, and the data used were secondary data. The data were obtained from Stockbit.com. A Stockbit is an application that can be used to invest online in shares. In addition, stockbits also provide financial report data for companies listed on the stock exchange so that potential investors can carry out an analysis before deciding to invest. The use of the stockbit application is intended to make the data-collection process more efficient. Data that is not available in the application can then be accessed from the company's annual report or financial report downloaded from the Indonesia Stock Exchange (BEI) via the website www.idx.co.id or the company's official website for the 2018-2022 period.

#### 3.3. Operational Variables

##### 3.3.1. Tax evasion

This study uses tax avoidance as the dependent variable. Tax avoidance is an effort to reduce tax obligations in ways that are still permitted by tax regulations (Freedman, 2005; Hashimzade & Epifantseva, 2018; James, 2012). The use of ETR as a proxy for tax avoidance is based on several previous studies (Dyreng et al., 2010; Taylor & Richardson, 2012). The ETR is the level of tax that must be paid by taxpayers compared to the income generated. The ETR is formulated as follows:

$$\text{ETR} = \frac{\text{Tax expense}}{\text{Profit before tax}}$$

The greater the ETR, the greater the tax burden borne by the company compared to its profit before tax. Conversely, the smaller the ETR, the smaller the company's tax burden compared to the profit before tax. The smaller the tax burden borne by the company, the higher is the level of tax avoidance. Therefore, it can be concluded that the greater the ETR, the lower is the level of tax avoidance, and vice versa. In other words, the ETR reflects the value of tax compliance. Therefore, the TA level is inversely proportional to the ETR value.
3.3.2. **Transfer Pricing**

Transfer pricing is defined as determining the prices in transactions between parties with a special relationship (Ministry of Finance, 2015). Hilton and Platt (2020) defined transfer pricing as the value charged when one division sells goods or services to another. Liu et al. (2020) state that transfer pricing is the determination of prices for internal (intra-company) transactions of goods, services, intangible assets, and capital flows within multinational companies.

The transfer pricing measurement uses a score based on the criteria used in Amidu's (2019) study, which consists of:

1. Having a subsidiary in a tax-haven country.
2. Transactions with subsidiaries located in tax-haven countries.
3. Having a parent or subsidiary company in a country with a different tax rate than a tax-haven country.
4. Transactions with related parties located in countries with different tax rates.
5. Royalty payments related to intangible assets between related parties.

Each item then received a score of 1 if present and 0 otherwise. The number of company scores that matched the criteria was then divided by the maximum total score. A score ratio of 1 indicates a company's tendency to carry out high-transfer-pricing activities.

3.3.3. **Thin Capitalization**

According to the OECD (2015), thin capitalization is a situation in which a company is funded with a higher level of debt than capital. In Indonesia, the highest limit for the ratio of debt-to-capital allowed is 4 1 (PMK 169 of 2015). This means that, if the ratio of debt to capital exceeds this limit, the interest expense that can be charged is equal to the loan costs with the maximum limit of the ratio of debt and capital allowed. Therefore, in this study, thin capitalization was measured using the debt-to-equity ratio (DER) as used in Jumailah's (2020) research. The DER is formulated as follows:

\[
\text{DER} = \frac{\text{Debt}}{\text{Capital}}
\]

The greater the DER, the greater the debt used as a source of company funding compared with the capital it has. Therefore, the greater the DER, the higher is the level of thin capitalization.

3.3.4. **Deferred Tax**

In this study, the calculation of the deferred tax burden was measured using a ratio scale. This research refers to Phillips et al. (2003) by dividing the deferred tax expense by total assets or total assets of the previous year. The following model measures deferred taxes (Phillips et al., 2003):

\[
\text{Deferred Tax Expense Ratio}_{it} = \frac{\text{Deferred Tax Expenses}_{it}}{\text{Total Assets}_{it-1}}
\]

The greater the deferred tax expense ratio, the greater is the company's deferred tax burden, and vice versa. The negative value in the calculation of the deferred tax expense ratio arises because, in the financial statements of the year studied, the company has deferred tax benefits.

3.3.5. **Inventory Intensity**

This study uses this ratio to calculate inventory intensity. The measurements used in this research refer to Intan and Jati (2019) and Yulianty et al. (2021) by dividing the inventory owned by the company's total assets. The following is a model for measuring inventory intensity (Intan & Jati, 2019; Yulianty et al., 2021):

\[
\text{Inventory Intensity} = \frac{\text{Supply}}{\text{Total Assets}}
\]

The greater the inventory intensity, the greater is the inventory owned by the company. Conversely, the smaller the inventory intensity, the smaller is the company's inventory.
3.4. Data analysis method

3.4.1. Descriptive Statistical Analysis
This analysis is used to describe or illustrate data by examining the mean, standard deviation, maximum value, and minimum value (Ghozali, 2016). These descriptive statistics describe the variables in the research, with the dependent variable being tax avoidance and the independent variables being transfer pricing, thin capitalization, deferred taxes, and inventory intensity.

3.4.2. Determination of the Estimation Model
Three models can be used to analyze panel data regression: the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). The most appropriate model is described in more detail as follows:

a. Test Chow
The Chow test is used to determine the appropriate common effect or fixed effect model for estimating the panel data regression. The testing hypothesis is as follows:
H₀: common effect model (CEM)
H₁: fixed effect model (FEM)
If the Chi-square cross-section probability is greater than 0.05, then H₀ is accepted, and panel data regression is estimated using the CEM model. However, if the Chi-square cross-section probability is smaller than 0.05, H₀ is rejected, and the panel data regression estimation uses the FEM model.

b. Hausman test
The Hausman test is used to determine which fixed effect or random effect model is appropriate for estimating the panel data regression. The hypotheses for this test are as follows:
H₀: random effect model (REM)
H₁: fixed effect model (FEM)
If the random cross-section probability is greater than 0.05, H₀ is accepted, and panel data regression is estimated using the REM model. However, if the random cross-section probability is smaller than 0.05, H₀ is rejected, and the panel data regression estimation uses the FEM model.

c. Lagrange Multiplier Test
The LM test is used to determine the appropriate random effect or common effect model to estimate panel data regression. The hypotheses for this test are as follows:
H₀: random effect model (CEM)
H₁: fixed effect model (REM)
If the Breusch-Pagan cross-section probability is greater than 0.05, then H₀ is accepted, and panel data regression is estimated using the CEM model. However, if the Breusch-Pagan cross-section probability is smaller than 0.05, then H₀ is rejected, and the panel data regression estimation uses the REM model.

3.4.3. Classic assumption test
In the panel data regression analysis, the common effect model (CEM) and fixed effect model (FEM) use the Ordinary Least Squares (OLS) approach, whereas the random effect model (REM) uses the Generalized Least Squares (GLS) approach. Before being used in hypothesis testing, the regression model must meet the Best Linear Unbiased Estimator (BLUE) criteria, namely, linear, unbiased, and have minimum variance. To fulfill the BLUE criteria, the following classical assumption tests were carried out:

a. Normality test
Gujarati and Porter (2009) suggested conducting normality tests, especially in the case of small samples, because the assumption of normality becomes increasingly important for small sample sizes. Meanwhile, based on the Central Limit Theorem, when the sample size increases, the distribution of the sample average (in this case, the average error term) tends to approach a normal distribution regardless of the shape of the original population distribution. Thus, the violation of the normality assumption becomes less crucial.
b. Multicollinearity Test
Multicollinearity assumption testing was used to determine whether the regression model had a high correlation with the independent variables (Gujarati & Porter, 2009). Regression was classified as good if there was no correlation between independent variables. Multicollinearity was detected using the pairwise correlation method. If the correlation coefficient between independent variables was greater than 0.80, it was suspected that there were symptoms of multicollinearity in the model. However, if the correlation coefficient value between the independent variables is smaller than 0.80, it can be concluded that there is no multicollinearity problem.

c. Autocorrelation Test
This test aims to determine whether there is a correlation between residuals in one time period and residuals in another time period in the regression model (Gujarati & Porter, 2009). Autocorrelation is caused by observations carried out sequentially over time in relation to one another. Autocorrelation detection in this study used the Durbin–Watson (DW) test. The autocorrelation test criteria in the regression model are as follows:

<table>
<thead>
<tr>
<th>Autocorrelation</th>
<th>dL</th>
<th>dU</th>
<th>4-dU</th>
<th>4-dL</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doubtful</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>There isn’t any</td>
<td></td>
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<tr>
<td>Autocorrelation</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Doubtful</td>
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<tr>
<td>Negative</td>
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</table>

Figure 2. Autocorrelation Test Criteria

Thus, it can be concluded that there is no autocorrelation problem if dL < dU < DW < 4-dU < 4-dL. The dL and dU values were obtained from the Durbin-Watson critical-bound calculator based on Turner (2020).

d. Heteroscedasticity Test
In the REM Model, Gujarati and Porter (2009) stated that the Generalized Least Squares (GLS) estimator already considers heteroscedasticity, so it no longer needs to be tested explicitly. This statement is supported by Wooldridge (2010), who states that the homoscedasticity assumption is not required in the REM Model. This is because the GLS estimator is consistent, even if there is heteroscedasticity in the error term.

3.4.4. Hypothesis testing
This research uses hypothesis testing in the form of a t-test, F-test, and coefficient of determination test (R2). Hypothesis testing was conducted based on the regression model for this study, which was formulated as follows:

\[ ETR = \beta_0 + \beta_1 TPR_{it} + \beta_2 DER_{it} + \beta_3 DTE_{it} + \beta_4 INVR_{it} + \varepsilon_{it} \]  

(I)

Information:

- ETR : Tax avoidance
- TPR : Transfer Pricing
- DER : Thin Capitalization
- DTE : Deferred tax
- INVR : Inventory intensity

a. T test
The criteria for the t-test in this research are that the probability value is <5% and the direction of the coefficient is in accordance with the research model hypothesis, which means that the hypothesis is supported. Conversely, if the probability value is > 5% and/or the direction of the coefficient is not in accordance with the research model hypothesis then the hypothesis is not supported.
b. F test
The F test criteria in this research is that if the calculated F is less than 5%, then the hypothesis is supported. However, if the calculated F is greater than 5%, then the hypothesis is not supported, which means that the independent variables together have no influence on the dependent variable.

c. Coefficient of Determination Test ($R^2$)
This test was performed to determine the influence of the independent variables on the dependent variable. The greater the R2, the stronger is the influence of the independent variable on the dependent variable. The coefficient of determination was between 0 and 1. If it is 0, there is no relationship between the independent and dependent variables, whereas if it is 1, there is a strong or perfect relationship between the independent variable and the dependent variable.

4. Results and discussion
4.1 Description of Research Sample
This study aims to analyze the effect of transfer pricing, thin capitalization, deferred tax, and inventory intensity on tax avoidance in companies listed on the Indonesia Stock Exchange for the period 2018–2022. The method used for sample selection in this study uses a purposive sampling method with the following criteria: previously set. From the established criteria, 535 sample companies were obtained with the following details.

Table 1. Research Sample

<table>
<thead>
<tr>
<th>Information</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companies registered on the IDX before 2018</td>
<td>547</td>
</tr>
<tr>
<td>Companies are exempted according to Minister of Finance Regulation Number 169/PMK.010/2015</td>
<td>(192)</td>
</tr>
<tr>
<td>Companies that earn negative profit before tax (loss) during the observation period.</td>
<td>(215)</td>
</tr>
<tr>
<td>Companies whose annual reports are inaccessible</td>
<td>(8)</td>
</tr>
<tr>
<td>Companies that present financial reports in foreign currency</td>
<td>(14)</td>
</tr>
<tr>
<td>Companies with incomplete data</td>
<td>(8)</td>
</tr>
<tr>
<td>Companies that meet the criteria are used as samples</td>
<td>107</td>
</tr>
<tr>
<td>Total observations used in the research (108 x 5)</td>
<td>535</td>
</tr>
</tbody>
</table>

Source: Data processed by researchers, 2024

As shown in Table 1, 547 companies were registered on the Indonesian Stock Exchange before 2018. From this data, there are also eight companies whose financial reports cannot be accessed, 14 companies that present their financial reports in USD, and eight companies that do not have complete research data.

4.2 Descriptive Statistical Analysis
The variables tested in this study are transfer pricing, thin capitalization, deferred tax, inventory intensity, and tax avoidance. Descriptive statistical testing of the 535 samples was performed using the Eviews 12. Descriptive statistics are presented in Table 2.

Table 2. Sample Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>ETR</th>
<th>TPR</th>
<th>DER</th>
<th>DTE</th>
<th>INVR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.256557</td>
<td>0.256449</td>
<td>0.837782</td>
<td>-0.000099</td>
<td>0.181419</td>
</tr>
<tr>
<td>Median</td>
<td>0.231898</td>
<td>0.200000</td>
<td>0.542552</td>
<td>-0.000065</td>
<td>0.165203</td>
</tr>
<tr>
<td>Maximum</td>
<td>2.940760</td>
<td>1.000000</td>
<td>5.442585</td>
<td>0.035769</td>
<td>0.607863</td>
</tr>
<tr>
<td>Minimum</td>
<td>-1.221765</td>
<td>0.000000</td>
<td>0.071273</td>
<td>-0.040738</td>
<td>0.000384</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.292553</td>
<td>0.301604</td>
<td>0.785810</td>
<td>0.004925</td>
<td>0.120584</td>
</tr>
<tr>
<td>Skewness</td>
<td>5.159060</td>
<td>1.097902</td>
<td>2.231100</td>
<td>-0.296312</td>
<td>0.696908</td>
</tr>
</tbody>
</table>
Jarque-Bera  47735.46  108.06  1371.72  6057.14  43.5628
Probability  0.000000  0.000000  0.000000  0.000000
Sum  137.2577  137.2000  448.2135  -0.053119  97.0592
Sum Sq. Dev.  45.70360  48.5752  329.7436  0.012954  7.764585
Observations  535  535  535  535  535

Source: Data processed using Eviews 12, 2024

4.3 Determination of the Estimation Model

a. Test Chow

Table 3. Chow Test Results

<table>
<thead>
<tr>
<th>Effects Test</th>
<th>Statistic</th>
<th>d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>3.080309</td>
<td>(106,424)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>305.497431</td>
<td>106</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Source: Data processed using Eviews 12, 2024

The Chow test is used to determine whether the Common Effect (CEM) or Fixed Effect (FEM) model is the most suitable for estimating the panel data. Decision-making is performed by looking at the chi-square cross-section probability value. The results of the Chow test show that the Chi-square cross-section probability value is 0.00 or less than 0.05. Therefore, based on the Chow test, H0 was rejected and the panel data regression estimation used the FEM model. Therefore, the regression estimation model is determined using the Hausman test.

b. Hausman test

Table 4. Hausman Test Results

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>7.679181</td>
<td>4</td>
<td>0.1041</td>
</tr>
</tbody>
</table>

Source: Data processed using Eviews 12, 2024

The Hausman test is used to determine whether the fixed effects (FEM) or random effects (REM) model is the most suitable for estimating panel data. Decision-making is performed by examining the random cross-section probability value. The results of the Hausman test show a probability value of 0.10 or greater than 0.05. Therefore, based on the Hausman test, H0 is accepted, and the panel data regression estimates use the REM model. To ensure the consistency of the previous model selection test results, a Lagrange Multiplier test was performed.

c. Lagrange Multiplier Test

Table 5. Lagrange Multiplier Test Results

<table>
<thead>
<tr>
<th>Cross-section</th>
<th>Test Hypothesis Time</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breusch-Pagan</td>
<td>85.25185</td>
<td>0.248149</td>
</tr>
<tr>
<td></td>
<td>(0.0000)</td>
<td>(0.6184)</td>
</tr>
</tbody>
</table>

Source: Data processed using Eviews 12, 2024

The Lagrange Multiplier test is used to determine whether the Common Effect (CEM) or Random Effect (REM) model is the most suitable for estimating the panel data. The results of the Lagrange multiplier test show that the Breusch-Pagan cross-section probability value is 0.00 or less than equal to 0.05. Therefore, based on the Lagrange multiplier test, H0 was rejected, and the best regression estimation model used in this study was REM.
4.4 Classic assumption test

The classic assumption test is used to ensure that the regression model meets the Best Linear Unbiased Estimator (BLUE) criteria, namely, linear, unbiased, and has minimum variance. Therefore, the classical assumption test is performed as follows:

a. Normality test
The normality test aims to determine whether the error term (residual) in the regression model is normally distributed (Gujarati & Porter, 2009). However, Gujarati and Porter (2009) argue that the normality test is not necessary to prove that the estimator is (Best Linear Unbiased Estimator). This statement supports Hsiao (2007), who stated that in panel data regression analysis with large samples involving many observations across individuals and across time, the assumption of a normal distribution of the error term becomes less crucial.

b. Multicollinearity Test

Table 6. Multicollinearity Test Results

<table>
<thead>
<tr>
<th></th>
<th>TPR</th>
<th>DER</th>
<th>DTE</th>
<th>INVR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPR</td>
<td>1.000000</td>
<td>0.154512</td>
<td>-1.61446</td>
<td>-0.037500</td>
</tr>
<tr>
<td>DER</td>
<td>0.154512</td>
<td>1.000000</td>
<td>-0.153102</td>
<td>0.091372</td>
</tr>
<tr>
<td>DTE</td>
<td>-1.61446</td>
<td>-0.153102</td>
<td>1.000000</td>
<td>-0.026692</td>
</tr>
<tr>
<td>INVR</td>
<td>-0.037500</td>
<td>0.091372</td>
<td>-0.026692</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Source: Data processed using Eviews 12, 2024

From the results of the multicollinearity test, it is known that the TPR and DER correlation coefficient value is 0.15, the TPR and DTE correlation coefficient value is -1.61, the TPR and INVR correlation coefficient value is -0.04, the DER and DTE correlation coefficient value is -0.15, the correlation coefficient value of DER and INVR is 0.09, and the correlation coefficient value of DTE and INVR is -0.03. These results show that all correlation coefficient values between the independent variables are smaller than 0.80. Thus, from the test results, it can be concluded that there is no multicollinearity problem.

c. Autocorrelation Test

Table 7. Autocorrelation Test Results

<table>
<thead>
<tr>
<th></th>
<th>dL</th>
<th>dU</th>
<th>DW</th>
<th>4-dU</th>
<th>4-dL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.841</td>
<td>1.877</td>
<td>1.985</td>
<td>2.123</td>
<td>2.159</td>
</tr>
</tbody>
</table>

Source: Data processed using Eviews 12 and Durbin-Watson critical bound calculator, 2024

Based on the hypothesis test table, the DW value was 1.99. Meanwhile, the dL and dU values were obtained using the Durbin-Watson critical-bound calculator based on Turner (2020). The results of the autocorrelation test show that dL < dU < DW < 4-dU < 4-dL; thus, it can be concluded that there is no autocorrelation problem in the data.

d. Heteroscedasticity Test

From the model selection test, the best regression estimation model used in this research is REM. In the REM Model, Gujarati and Porter (2009) stated that the Generalized Least Squares (GLS) estimator already considers heteroscedasticity, so it no longer needs to be tested explicitly. This statement is supported by Wooldridge (2010), who states that the homoscedasticity assumption is not required in the REM Model. This is because the GLS estimator is consistent, even if there is heteroscedasticity in the error term.

4.5 Hypothesis testing

Table 8. Hypothesis Test Results

\[ ETR = \alpha + \beta_1 \text{TPR} + \beta_2 \text{DER} + \beta_3 \text{DTE} + \beta_4 \text{INVR} + \epsilon \]
# Coefficient of Determination Test

From the results of the coefficient of determination test on the research model, it can be seen that the adjusted $R^2$ value is 0.07 or 7%, which means that the variation in the dependent variable, namely tax avoidance, can be explained by the independent variables, namely transfer pricing, thin capitalization, deferred tax, and inventory intensity of 7%, while 93% of tax avoidance is influenced by factors outside observations or outside the research model.

# F test

Based on the results of the F test on the research model, it can be seen that the F value is 11.30 and the significance value is 0.00. The significance value is 0.00 is smaller than the significance level of 0.05. Therefore, this panel data regression model is suitable for testing the next stage.

# T test

Based on the results of the panel data regression test, the following mathematical model is obtained:

$$ETR = 0.204 + 0.065\ TPR + 0.043\ DER + 16.530\ DTE + 0.007\ INVR$$

1. The mathematical model showed a constant value of 0.204, meaning that without the TPR, DER, DTE, and INVR variables, the ETR variable would increase by 20.4%.
2. The regression coefficient value for the TPR variable is 0.065, meaning that if the values of the other variables are constant and the TPR variable increases by 1%, the ETR variable will increase by 6.5%. Conversely, if the values of the other variables are constant and the TPR variable decreases by 1%, then the ETR variable experiences a decrease of 6.5%.
3. The regression coefficient value for the DER variable is 0.043, meaning that if the values of the other variables are constant and the DER variable increases by 1%, the ETR variable will increase by 4.3%. Conversely, if the values of the other variables are constant and the DER variable decreases by 1%, then the ETR variable decreases by 4.3%.
4. The regression coefficient value for the DTE variable is 16.530, meaning that if the values of the other variables are constant and the DTE variable increases by 1%, the ETR variable will increase by 1,653%. Conversely, if the values of the other variables are constant and the DTE variable decreases by 1%, then the ETR variable experiences a decrease of 1,653%.
5. The regression coefficient value for the INVR variable is 0.007, meaning that if the values of the other variables are constant and the INVR variable increases by 1%, the ETR variable will increase by 0.7%. Conversely, if the values of the other variables are constant and the INVR variable decreases by 1%, then the ETR variable decreases by 0.7%.
5. Conclusion

5.1 Conclusions

This study aims to obtain empirical evidence and analyze the influence of transfer pricing, thin capitalization, deferred tax, and inventory intensity on tax avoidance. Based on statistical testing, the following conclusions were drawn.

a. Transfer pricing has no effect on tax avoidance. This is because a company's motivation to carry out transfer pricing can vary depending on its objectives and situation, not solely in order to avoid tax (Bhat, 2009). Some companies’ motivations for setting transfer prices are related to managerial objectives, market price determination, and government policy. In addition, during this research period, the Covid-19 pandemic which caused the government to issue various tax incentives and implement a Voluntary Disclosure Program that could trigger taxpayers to no longer have the motivation to avoid tax.

b. Thin capitalization has a negative effect on tax avoidance. This is because the company's decision to implement a thin capitalization strategy causes the use of debt that is greater than capital in the company's financing structure (Blouin, Huisinga, Laeven, & Nicodème, 2014). This condition makes the company highly dependent on creditors so that operational activities can run smoothly. Because the company is under the strict supervision of creditors who have entrusted their funds, managers tend to be careful and avoid the high risks related to tax violations. Tax evasion can cause bad company image, decreased company value, increased risk of inspection, and economic losses caused by tax sanctions. Therefore, to maintain the name and trust of creditors, managers will try to comply with applicable tax regulations.

c. Deferred tax has a negative effect on tax avoidance. The difference in the amount of the tax burden between according to accounting calculations and according to tax regulations causes a fiscal correction, giving rise to a deferred tax burden. The greater the deferred tax, the greater the tax burden recognized by the company. Therefore, the greater the deferred tax disclosed by the company, the greater the company's compliance. According to Gula and Mulyani (2020), the greater the difference between fiscal profit and accounting profit indicates the greater management discretion which is reflected in deferred taxes. Management discretion is used by managers to comply with applicable tax regulations so that the company can avoid possible risks of audit and losses caused by tax sanctions in the future.

d. Inventory intensity has no effect on tax avoidance. This research proves that companies in Indonesia have succeeded in implementing the right strategy to avoid incurring costs from the large inventory intensity they own. According to Rusdiana (2014), in determining the amount of inventory, companies must try to reduce ordering costs and storage costs. This requires accurate estimates of the amount of inventory needed in the production process so that storage costs can be minimized. In addition, the amount of inventory held must also be sufficient to meet production needs so that it does not result in high ordering costs for the company. Thus, the amount of inventory intensity a company owns has no effect on the level of tax avoidance. In addition, it is known that the level of inventory intensity is not enough to influence the level of corporate tax avoidance. Although inventory intensity plays an important role in company operational activities, its effect on tax avoidance practices shows insignificant results.

5.2 Research Limitations

In this research, there are several limitations that become challenges or obstacles faced in the research. Limitations of this research include:

1. It is difficult to determine proxies to measure tax avoidance which is hidden and complex. The majority of previous research uses tax avoidance proxies calculated based on financial report data which may not always accurately reflect the information reported by taxpayers in their tax reports. Tax report data submitted by taxpayers to the tax authority is confidential and not available to the public. This makes it difficult for researchers to access data that is more accurate and reflects actual tax avoidance practices.

2. The research period includes extreme conditions where the Covid-19 pandemic occurred which could affect the level of taxpayer compliance. The government has issued various PPh and VAT incentives that taxpayers can take advantage of in order to overcome the impact of the Covid-19 pandemic. Tax incentives given to the public are in the form of PPh Article 21 borne by the
Government, exemption from PPh Article 22 on Imports, reduced installments of PPh Article 25 for Taxpayers with certain criteria, acceleration of VAT refunds, tax facilities for medical equipment and its supports, tax incentives for MSMEs, as well as VAT borne by the government in the housing industry sector, retail trade sector, and motor vehicle industry sector (DJP, 2020, 2021). Apart from that, in 2022 the government will also promote a voluntary disclosure program (PPS) which provides an opportunity for taxpayers who have not participated in the Tax Amnesty program to report assets that are not covered in this research.

3. From the results of the coefficient of determination test on the research model, it is known that the adjusted R2 value is 0.07. This means that the variation in the value of tax avoidance that can be explained by the independent variables in this research model is only 7%. Thus, 93% of the variation in tax avoidance values is influenced by other factors not covered in this research.

5.3 Suggestions
1. Further research could seek to establish cooperation or collaboration with tax authorities to gain access to company tax report data for research purposes. Thus, it allows researchers to measure tax avoidance more accurately using data directly from tax reports.

2. Further research can be carried out by sorting out the special conditions that occurred during the research period. For example, by differentiating the conditions of tax avoidance during the Covid-19 period from the post-Covid-19 period. Also, research during the implementation of the Voluntary Disclosure Program policy and the period after. Research results that consider these special conditions can provide more precise and appropriate recommendations in formulating strategies or regulations in dealing with similar situations in the future.

3. Future research can test other factors that are thought to influence the level of tax avoidance that were not tested in this study. Some of them are corporate governance, executive characteristics, and company ownership structure. The quality of corporate governance, which includes the independence of the board of commissioners, the existence of an audit committee, and ownership structure, can influence tax avoidance practices. Good governance will generally reduce the tendency to avoid taxes. Executive characteristics such as educational background, experience, compensation, and risk preferences can influence decisions regarding corporate tax avoidance strategies. In addition, a company's ownership structure, such as institutional ownership, foreign ownership, or family ownership can influence tax avoidance practices.

References
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