

## **Does Female on Board Mitigate Earnings Manipulation to Pay Less Taxes? Further Evidence from Emerging Market**

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### **ABSTRACT**

This study analyzes the effect of earnings management on tax avoidance with the moderating role of gender diversity on the board of directors (women on board/WoB) in Indonesian manufacturing companies. The data were taken from the Indonesia Stock Exchange (IDX) for the 2021–2023 period (380 samples). Using panel data regression and measuring tax avoidance through the Effective Tax Rate (ETR) and Book-Tax Differences (BTD), the results indicate that earnings management (both real and accrual) has no significant effect on ETR (Effective Tax Rate). Consequently, we reject the initial hypothesis (H1). However, real earnings management (REM) increases BTD (Book-Tax Differences). Profitability (ROA) emerged as the dominant factor. It is negatively associated with ETR (profitable companies pay less tax) and positively associated with BTD (widening the accounting-taxable income gap). Women on board (the proportion of female directors) failed to moderate the relationship between earnings management and tax avoidance. The low representation of women (averaging 10.9%) and the absence of strategic roles are suspected causes. The tax authority (DJP) needs to prioritise audits of companies with high ROA and focus on BTD analyses and real operational activities. This study highlights the complexity of tax dynamics in Indonesia, where profitability proves more crucial than earnings management or gender diversity in influencing tax avoidance.

Key word : Earnings Management, Tax Avoidance, Women on Board, Gender, Manipulation

### **INTRODUCTION**

According to the report "The State of Tax Justice 2023" by the Tax Justice Network, countries around the world lose \$480 billion annually due to global tax abuse. High-income countries lose more in nominal terms (\$433 billion/year), while low-income countries, though losing less in absolute terms (\$47 billion/year), experience far greater relative impacts. Developing countries lose billions every year due to tax avoidance strategies involving transfer pricing (Cobham et al., 2022). Although not illegal, tax avoidance is often considered unethical because it reduces the tax base and government revenue (Claritus et al., 2023). Relatively high corporate tax rates encourage tax avoidance. Indonesia, a low-income developing country, has a relatively high corporate tax rate of 22% (DJP). The tax amnesty program (2016–2017) opened opportunities to study changes in tax avoidance strategies post-amnesty. The tax authority (DJP) needs to strengthen its legal instruments and tax administration to prevent future tax avoidance practices (Cobham et al., 2022).

An increasing book-tax gap indicates a misalignment between accounting principles and prevailing tax regulations, offering opportunities for companies to increase book profits and reduce taxable income (Frank et al., 2009). This could lead to management discretion being misused for earnings management. Earnings management, especially accrual-based, creates a gap between book and taxable income, making it easier for companies to

manipulate LTD and reduce tax liabilities (Badertscher et al., 2019; Phillips et al., 2003). Therefore, earnings management can be more easily converted into tax savings (Harusetya & Stefani, 2020). Previous research revealed that companies engaged in earnings management are also involved in tax avoidance (MacCarthy, 2021; Yorke et al., 2016; Wang & Mao, 2021; Chen et al., 2016; Amidu et al., 2019; Irawan et al., 2020). Interestingly, Delgado et al. (2023) refuted the notion that earnings manipulation is used for tax avoidance. Companies were found to pay higher taxes during earnings manipulation, and LTD was caused by other factors. Goh et al. (2016), in their meta-analysis published in the *Journal of Accounting Literature*, concluded that the relationship between earnings management and tax avoidance is empirically consistent. These practices reinforce each other in a vicious cycle. Companies with poor governance use earnings management to reduce taxes and utilize the "saved" earnings to finance further manipulation to avoid detection (Blaylock, 2016).

In this context, gender diversity on the board (BGEND) has become a focal point in corporate governance, especially in relation to social and environmental issues (Haque, 2017; Nguyen, 2020). BGEND is viewed as an effective monitoring tool and a driver of sustainable growth (Orazalin & Baydauletov, 2020; Zalata et al., 2019). Agency theory suggests that the board is responsible for overseeing company performance. Women directors tend to enhance oversight quality, prevent fraudulent earnings management, foster ethical board behavior, and improve financial reporting quality more than male directors (Arioglu, 2020; Harakeh et al., 2019; Maglio et al., 2020; Orazalin, 2020; Srinidhi et al., 2011).

The Deloitte Global Boardroom Program's seventh edition, *"Women in the Boardroom: A Global Perspective,"* shows that women are still significantly underrepresented on corporate boards globally. Although crucial decisions are made at this level, progress in increasing women representation has been slow. The report analyzed data from 10,493 companies in 51 countries, covering 176,340 board seats across Asia Pacific, the Americas, Europe, the Middle East, and Africa, along with gender equity policies in 72 other countries. The global average shows only 19.7% of board seats are held by women, and just 6.7% of board chairs are women. In Indonesia, despite decades of promoting women's emancipation (McGregor, 2012), gender discrimination persists in practice. Therefore, research in this context is relevant to conduct this study.

The phenomenon of gender differences in corporate tax avoidance has been highlighted in several recent studies (Furlotti et al., 2019; Hoseini et al., 2019). These studies have examined the extent to which the presence of women on boards of directors influences tax avoidance behavior, often using a dummy variable for gender (Furlotti et al., 2019). Hoseini et al. (2019) also focused on the proportion of women on boards and its impact on tax avoidance.

Therefore, it is crucial to conduct research on the number of women directors and women CEOs in Indonesian companies. Although the idea of women's emancipation has long been promoted, in practice, discriminatory treatment still exists. Increasing women representation on boards is not merely a matter of numbers it is about social justice and the redistribution of power. This research can serve as an advocacy tool for the women's movement in Indonesia. The diverse results from previous studies examining the relationship between earnings management and tax avoidance provide room for deeper exploration. By adding the variable "women on board" as a moderating factor, this study aims to enrich the existing complex theoretical framework.

This study employs data from the Indonesia Stock Exchange (IDX) and is expected to represent the conditions in a developing country. The selection of manufacturing companies as the sample offers a strong foundation for measuring the influence of earnings management, tax avoidance, and women on board. Manufacturing firms were chosen because they provide access to rich historical and longitudinal data relevant to the variables under study (Ferdows & De Meyer, 1990). Companies in this sector operate on a large scale and conduct highly complex transactions, making them prone to engage in earnings management. Another reason is that indications of tax avoidance among manufacturing firms in Indonesia remain a concern. Although there is no specific official data, previous research, tax revenue reports, and historical cases suggest that tax avoidance practices are still occurring.

Therefore, this research is expected to broaden the understanding of gender roles in governance and taxation. It aims to provide recent empirical evidence on the specific role of women on boards in the Indonesian context, particularly in influencing the relationship between two complex financial practices. The findings will enrich the literature on corporate governance, business ethics, and taxation from a gendered perspective.

Eventually, the structure of this paper is as follows: Section I presents the research background. Section II reviews previous literature and develops the hypotheses. Section III outlines the research design, methodology, and analytical tools. Section IV presents the results on the effect of earnings management on tax avoidance and provides a discussion. Section V concludes the study.

## **LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### **Agency Theory**

Discussions on earnings management cannot be separated from agency theory. In this theory, the focus lies on designing the most effective and efficient contracts as the basis for the relationship between the owners (principals) and the managers (agents). Principals aim to align the interests of all parties involved in the agency relationship by designing optimal contracts (Jensen & Meckling, 1976).

Meanwhile, when company ownership is separated from control (e.g., the owners do not directly manage the business), agency problems may arise. This separation often creates information asymmetry, whereby the managers possess more detailed knowledge about the company than the owners. In such conditions, managers may be tempted to manipulate financial reports by managing earnings to make them appear more favourable or align with their objectives.

Additionally, managers are expected to maximize profit and company value on behalf of shareholders (Campbell, 2007; Christensen & Murphy, 2004). Studies show that women in executive positions enhance board effectiveness particularly in reducing agency problems with 82% of studies supporting this claim (Pletzer et al., 2015). Companies led by female CEOs are found to have better audit quality and lower fraud risk (Adams & Ferreira, 2009). This is supported by Khan & Vieito (2013), who reported that female CEOs improve the quality of financial reporting, with a 24% increase in accrual quality an indicator of transparency and a core principle of good corporate governance.

### **Earnings Management and Tax Avoidance**

Roychowdhury (2006) provides strong evidence that companies—particularly in the manufacturing sector—manipulate real activities to avoid reporting losses. One way to avoid such losses is by reducing tax burdens. Capras et al., (2024) found that the more companies manipulate figures in their financial reports, the lower the taxes they pay. In other words, financial manipulation is intentionally conducted to reduce tax liabilities.

However, this finding contradicts the results of Abella et al., (2023), who observed that managers use tax avoidance strategies not to reduce taxes directly but to manage earnings. Earnings management can be measured using two approaches: Real Earnings Management (REM) and Accrual Earnings Management (AEM). The Political Cost Hypothesis by Watts et al. (1978) argues that large companies with high exposure tend to avoid dual-risk behaviors such as both earnings manipulation and tax avoidance. Similarly, an empirical study by Kim et al., (2011) confirmed that companies engaging in aggressive earnings management actually have lower levels of tax avoidance—0.3 to 0.5 times lower than their peers. Therefore, the following hypotheses are proposed:

- H1: Higher earnings management increases tax avoidance.
- H1a: Higher real earnings management increases tax avoidance.
- H1b: Higher accrual earnings management increases tax avoidance.

#### **Women on Board (Proportion of Women Directors and Women CEO)**

The Indonesia Stock Exchange (IDX) includes gender diversity as part of the assessment criteria in its Corporate Governance Perception Index, in line with the IDX Good Corporate Governance guidelines (2023). The presence of women in management teams may influence corporate performance. According to Adams and Ferreira (2009), Carmo et al. (2022), Gomez et al. (2018), Guizani & Abdalkrim (2023), Khan & Subhan (2019), Khidmat et al. (2020), and Sieweke et al. (2023), women face fewer difficulties understanding market dynamics due to their distinct characteristics. Their perspectives especially in board decision making tend to benefit the company. Firms with gender diverse boards are 25% more likely to outperform their industry average in profitability. Additionally, women's tendency to avoid risks reduces the chances of financial distress. This is supported by Credit Suisse (2016), which stated that companies with female directors are less likely to be involved in corruption scandals or ethical violations. Rakia et al. (2024) found that companies with higher proportions of female directors show a negative relationship with tax avoidance. Specifically, firms with at least one female and one independent director especially in low-growth firms tend to adopt more conservative earnings management practices. This shows that the presence of women on boards promotes wiser and more ethical decision-making (Fernández & Tejerina Gaité, 2020; Liu et al., 2020; Rakia et al., 2024; Vacca et al., 2020; Yarram & Adapa, 2020).

However, in companies with high complexity and layered board structures, the effect of women directors is not always significant (Arun et al., 2015). Vähämaa & Peni (2010), using regression analysis, found a significant relationship between executive gender and financial reporting quality. Firms with female CFOs reported lower discretionary accruals, indicating lower opportunistic earnings management.

Therefore, the following hypotheses are formulated:

- H2 : The presence of women on the board weakens the relationship between earnings management and tax avoidance.

- H2a : The presence of women on the board weakens the effect of real earnings management on tax avoidance.
- H2b : The presence of women on the board weakens the effect of accrual earnings management on tax avoidance.

### Research Design

The object of this study consists of manufacturing firms operating in the *industrials* and *basic materials* sectors listed on the Indonesia Stock Exchange (IDX) that published their financial statements and annual reports during the period 2021–2023. Initially, 664 firm-year observations were identified. After excluding companies with incomplete data, evidence of tax utilization schemes, and those with no annual tax payments during the relevant period, 284 observations (42.77%) were removed. Consequently, 380 firm-year observations were retained for analysis.

**Table 1. Sample Selection**

Criteria	Firm-Years
Listed companies in industrials and basic materials sectors (IDX, 2021–2023)	664
Less: Companies with incomplete data, tax utilization schemes, or no annual tax payment	284
<b>Total</b>	<b>380</b>

### Variable Measurement

#### Dependent Variable: Tax Avoidance

The dependent variable in this study is tax avoidance, measured using two indicators: Effective Tax Rate (ETR) and Book-Tax Differences (BTD).

#### **Effective Tax Rate (ETR)**

Measures the proportion of tax expense recognized in the income statement relative to pre-tax income (Zimmerman, 1983).

$$ETR = \frac{\text{Total tax expense}_{it}}{\text{Pre-tax income}_{it}} \quad (1)$$

Where:

ETR<sub>it</sub> = Effective Tax Rate

Total Tax Expense = Total tax expenses  
(includes both current and deferred tax expenses.

Pre-Tax Income = income before tax as reported in financial statements.

i = firm i

t = period t

#### **Book-Tax Differences (BTD)**

Book Tax Differences (BTD): Captures the gap between accounting income (as reported in financials) and taxable income (as reported in tax filings), based on Manzon & Plesko (2002):

$$BTD = \text{Accounting Income} - \text{Taxable Income} \quad (2)$$

In this study, BTD refers to Book-Tax Differences. Accounting Income is Income before tax as reported in the income statement. For Taxable Income is Taxable income is not directly stated in the financial statements but can be estimated using the formula : Taxable Income is derived as Tax Expense divided by the Tax Rate. Where the tax rate used refers to the rate stipulated in Article 17, paragraph 1, section b of Law No. 7 of 2021 on the Harmonization of Tax Regulations (UU HPP) at 22%.

## **Independent Variable**

### **Real Earnings Management (REM)**

The earnings management factor is proxied using real earnings management (REM). This study adopts the REM calculation method proposed by Roychowdhury (2006). Three proxies are used to indicate earnings manipulation by the company: abnormal cash flows, abnormal production costs, and abnormal discretionary expenses (Roychowdhury, 2006).

$$\frac{CFO_{it}}{A_{it-1}} = \alpha_0 + \beta_1 \left( \frac{1}{A_{it-1}} \right) + \beta_2 \left( \frac{S_{it}}{A_{it-1}} \right) + \beta_3 \left( \frac{\Delta S_{it}}{A_{it-1}} \right) + \varepsilon_{it} \quad (3)$$

Where:

CFO<sub>it</sub> = Operating Cash Flow of company *i* in year *t*.

A<sub>it-1</sub> = Total assets of company *i* in year *t-1*.

S<sub>it</sub> = Sales of company *i* in year *t*.

ΔS<sub>it</sub> = Change in sales of company *i* from year *t-1* to year *t*.

ε<sub>it</sub> = Abnormal CFO

$$\frac{PROD_{it}}{A_{it-1}} = \alpha_0 + \beta_1 \left( \frac{1}{A_{it-1}} \right) + \beta_2 \left( \frac{S_{it}}{A_{it-1}} \right) + \beta_3 \left( \frac{\Delta S_{it}}{A_{it-1}} \right) + \beta_4 \left( \frac{\Delta S_{it-1}}{A_{it-1}} \right) + \varepsilon_{it} \quad (4)$$

Where:

PROD<sub>it</sub> = Production costs of company *i* in year *t* (calculated as cost of goods sold + change in inventory).

ΔS<sub>it-1</sub> = Change in sales of company *i* from year *t-2* to year *t-1*.

ε<sub>it</sub> = Abnormal PROD

$$\frac{DISXP_{it}}{TA_{it-1}} = \alpha_0 + \beta_1 \left( \frac{1}{TA_{it-1}} \right) + \beta_2 \left( \frac{S_{it-1}}{TA_{it-1}} \right) + \varepsilon_{it} \quad (5)$$

Where:

S<sub>it-1</sub> = Sales of company *i* in year *t-1*.

ε<sub>it</sub> = Abnormal DISEXP

Total REM Indicator:

$$REM = (-)Abnormal\ CFO + Abnormal\ PROD - (-)Abnormal\ DISEXP \quad (6)$$

### **Accrual Earnings Management**

Another earnings management variable, accrual earnings management, is measured using the Beneish Model (1999). This model is a mathematical formula that uses eight financial indicators to assess whether a company is engaging in earnings manipulation.

Beneish Model Formula:

$$M_{it} = -4,84 + (0,92 \times DSRI_{it}) + (0,528 \times GMI_{it}) + (0,404 \times AQI_{it}) + (0,892 \times SGI_{it}) + (0,115 \times DEPI_{it}) - (0,172 \times SGAI_{it}) + (4,679 \times TATA_{it}) - (0,327 \times LVGI_{it}) \quad (7)$$



Where:

- DSRI = Days Sales Receivable Index
- GMI = Gross Margin Index
- AQI = Assets Quality Index
- SGI = Sales Growth Index
- DEPI = Depreciation Index
- SGAI = Sales and General Administration expenses Index
- LVGI = Leverage Index
- TATA = Total Accruals to Total Assets

The explanation for each measurement is provided in the attachment.

How to determine manipulation:

- If the M-Score > -2.22: The company is suspected of engaging in accrual earnings management.
- If the M-Score ≤ -2.22: The company is not detected as engaging in accrual earnings management.

### **Moderating Variable**

#### ***Women on Board***

According to research conducted on gender diversity within an organization, the presence of women can enhance firm value (Hoseini et al., 2019). In this study, women directors are used as a moderating variable. The percentage of women directors in a company is calculated using the following formula (Rakia et al., 2023):

$$WD = \frac{\text{Number of Women Directors}_{it}}{\text{Total number of Directors}_{it}} \times 100\% \quad (8)$$

In this study, the number of women directors refers to the total number of female board members, while the total number of directors refers to the total number of board members (both male and female) in the company.

### **Control Variables**

This study includes control variables to examine the effect of company characteristics on tax avoidance. The variables used are firm size (Size), sales growth (Growth), and profitability (ROA) (Abella et al., 2023; Delgado et al., 2023; Minh Ha et al., 2021; Rego, 2003; Sonia & Suparmun, 2019). The researcher also includes another variable to control the effect of earnings management on tax avoidance, namely leverage (Lev) (MacCarthy, 2021). The COVID variable is included in the study because the pandemic created systematic external shocks that affected companies universally, including in their tax avoidance practices (Zhang & Liu, 2021).

Firm size is calculated using the logarithm of total assets. Large companies can allocate more resources for tax planning, so firm size indirectly influences tax avoidance strategies (Abella et al., 2023). ROA (Return on Assets) measures business performance by dividing net income by total assets. Most studies show a positive relationship between ROA and the effective tax rate. However, recent research in the European Union finds a negative relationship, the most profitable firms tend to pay lower taxes because they have more resources for tax planning (Abella et al., 2023; Konečná & Andrejovská, 2020). Sales growth is

calculated by subtracting the previous year's sales from the current year's sales and dividing that difference by the previous year's sales. An increase in sales tends to increase tax payments (Mohd Ali et al., 2017). Companies with high growth are more focused on maintaining positive performance to meet market expectations; therefore, their motivation is to increase profits (not reduce them as in tax avoidance) (Kuo & Lee, 2019). Leverage (LEV) represents the ratio of long term debt to equity capital. This debt ratio reflects agency problems arising from discretionary decisions that impact performance. LEV is used to measure its effect on firm performance, and tax liabilities are assessed based on this metric.

## METHODS

This study employs an unbalanced panel dataset. To test H1a – that higher real earnings management (REM) leads to increased tax avoidance behaviour – the following regression model was used:

$$TA_{i,t} = \beta_0 + \beta_1 REM_{i,t} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Growth_{i,t} + \beta_6 COVID_{i,t} + \epsilon \quad (9)$$

In Equation 9, TA refers to tax avoidance, while real earnings management is denoted as REM. To control for potential influencing factors, the following control variables are used: Size, Lev, ROA, and Growth.

H1b, which states that the higher the accrual earnings management, the greater the tax avoidance behavior, is tested using the following regression model as follows:

$$TA_{i,t} = \beta_0 + \beta_1 Mi_{i,t} + \beta_2 Size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Growth_{i,t} + \beta_6 COVID_{i,t} + \epsilon \quad (10)$$

In Equation 10, accrual earnings management is denoted as M.

H2a, which states that the presence of women on the board of directors (Women on Board) weakens the effect of real earnings management on tax avoidance, is tested using the following regression model:

$$TA_{i,t} = \beta_0 + \beta_1 REM_{i,t} + \beta_2 WD_{i,t} + \beta_3 (REM_{i,t} \times WD_{i,t}) + \beta_4 Size_{i,t} + \beta_5 Lev_{i,t} + \beta_6 ROA_{i,t} + \beta_7 Growth_{i,t} + \beta_8 COVID_{i,t} + \epsilon \quad (11)$$

In Equation 11, WD represents the proportion of female board directors.

H2b, which states that the presence of women on the board of directors (women on board) weakens the effect of accrual earnings management on tax avoidance, is tested using the following regression model:

$$TA_{i,t} = \beta_0 + \beta_1 Mi_{i,t} + \beta_2 WD_{i,t} + \beta_3 (Mi_{i,t} \times WD_{i,t}) + \beta_4 Size_{i,t} + \beta_5 Lev_{i,t} + \beta_6 ROA_{i,t} + \beta_7 Growth_{i,t} + \beta_8 COVID_{i,t} + \epsilon \quad (12)$$

## RESULTS

After applying the models, the results are summarized in a series of tables.

**Table 2. Results of Descriptive Statistical Analysis**

	N	Min	Max	Mean	Std. Dev
ETR	380	0,0001	0,9693	0,2408	0,1713
BTD	380	0,0002	0,6135	0,0690	0,0760
REM	380	-2,2969	1,3677	-0,0074	0,2989
M	380	-4,6584	43,8343	-2,0416	3,3524



Growth	380	-0,9317	18,8842	0,2884	1,2518
Lev	380	-7,2052	41,6476	1,0449	2,7194
ROA	380	0.0009933	0,6828	0,0852	0,0873
Size	380	24,5096	32,6839	28,5115	1,6989
Covid	380	0	1	0,3079	0,4622
WD	380	0	0,6667	0,1187	0,1738

Based on data from 380 manufacturing companies (for the period 2021–2023), the descriptive statistical findings reveal several critical dynamics. Tax Avoidance (ETR) exhibits an extreme range, with ETR values spanning from 0.0001 (nearly zero) to 0.9693 (approaching the statutory tax rate of 22%). The average ETR of 0.2408 (24.08%) is lower than Indonesia's statutory corporate tax rate (22%), indicating the presence of systematic tax avoidance practices. A standard deviation of 0.1713 reflects substantial variation among firms, with some companies engaging in highly aggressive tax behaviors.

Meanwhile, Book-Tax Difference (BTD) has an average of 0.0690 (6.9%), reflecting a manipulated discrepancy between book and taxable income (Frank & Rego, 2009). The maximum value of 0.6135 (61.35%) serves as a red flag warranting further investigation by tax authorities.

Accrual Earnings Management (M) shows a negative average (−2.0416), suggesting a predominance of income decreasing earnings management practices strategies used to suppress reported profits and potentially avoid tax scrutiny or regulatory attention. A high standard deviation (3.3524) and a maximum score of 43.8343 indicate the presence of extreme outliers engaging in massive accrual based manipulation. Real Earnings Management (REM) has an average near zero (−0.0074), implying that firms are relatively balanced in their use of operational (real) and accrual based manipulation strategies. The broad range (from −2.2969 to 1.3677) demonstrates diverse strategic behavior: some firms reduce sales or assets (income-decreasing), while others inflate expenses (income increasing). Women on Board (WD) averages at 11.87%, meaning that only a small portion of board seats are held by women. This is below both the global standard (19.7%, Deloitte 2023) and the Indonesian Financial Services Authority (OJK) target (minimum 30%). Here, there is evidence of extreme imbalance the minimum value is 0% (firms with no women directors), potentially leading to weak ethical oversight (Arioglu, 2020). On the other hand, the maximum of 66.67% (two thirds women representation) can be seen as a best practice example of gender oriented governance. The low representation of women on boards may exacerbate the vicious cycle of earnings management and tax avoidance (Blaylock, 2016).

The control variables begin with leverage (Lev), which shows an average of 1.0449, indicating that on average, debt is approximately equal to total assets. However, some firms exhibit negative leverage values (as low as −7.2052), which may indicate financial distress or reporting errors. Profitability (ROA) averages 8.53%, suggesting that the manufacturing sector remained profitable in the post pandemic period, despite ongoing tax pressures. Firm size (Size) has a small standard deviation (1.6989), indicating that the sample is dominated by large firms, with an average log of total assets at 28.51. The impact of Covid is reflected in 30.79% of the sample being significantly affected (dummy variable Covid = 1), which validates the relevance of this study to the post crisis economic recovery context.

**Table 3. Effect of Tax Avoidance (ETR; BTD) on Earnings Management (REM; M)**

Independen Variabel	Dependen Variabel		Dependen Variabel	
	ETR	BTB	ETR	BTB
	Coef t-value	Coef t-value	Coef. t-value	Coef. t-value
Const.	0,071 -0,49	0,008 -0,75	0 -0,05	0,001 -0,05
REM	-0,339 -1,06	0,008 -3,54 ***		
M			0,011 -1,48	0 -0,14
Growth	0,009 -1,29	-0,001 -1,92 *	0,004 -1,17	-0,001 -2,61 **
Lev	0,004 -1,16	0 -0,65	-0,561 -5,68	0 -0,68
Roa	-0,602 -5,69 ***	0,87 -110,93 ***	0,006 -1,26 ***	0,86 -115,71 ***
Covid	0,003 -0,17	0 -1,1 **	0,002 -0,12	0 -0,32 *
Size	0,007 -1,47	-0,003 -2,05	0,102 -0,71	-0,003 -1,84
F test	6,97 ***	2415,22 ***	6,76 ***	2335,04 ***
Adj R- squared	0,086	0,975	0,084	0,974
N	380	380	380	380

Note: \*, \*\*, \*\*\* refer to significance at  $\alpha$  10%, 5% and 1% level, respectively. One-tail test

The regression models in Table 3 are all statistically significant (Prob > F = 0.0000). This indicates that the combined independent variables (REM, Accruals Management, Leverage, ROA, Growth, Size, Covid) jointly influence both ETR and BTB. However, the ETR-REM regression model explains only 10.08% of the variation in ETR ( $R^2 = 0.1008$ ), suggesting numerous factors beyond the model affect corporate tax rates. Though seemingly low, such values are common in tax behaviour studies due to the high complexity of non-quantifiable factors (e.g., corporate politics, relationships with tax authorities). Conversely, the BTB-REM regression model explains nearly all BTB variation. This exceptionally high value is rare in accounting research, indicating the dominance of internal firm factors in shaping the book-tax gap.

In the ETR model, Real Earnings Management (REM) shows no significant effect ( $\beta = -0.339$ ;  $t = -1.06$ ), leading to the rejection of H1. This contradicts findings by Wang & Mao (2021) and Kałdoński & Jewartowski (2020) linking REM to tax avoidance but aligns with Atwood et al. (2012), Frank et al. (2009), and Kim & Sohn (2013). REM's neutrality towards ETR stems from real-activity manipulations (e.g., R&D cuts) being subject to the same tax rules as normal operations, minimising short-term tax impacts. In contrast, the BTB model shows a significantly positive REM effect ( $\beta = 0.008$ ;  $t = 3.54***$ ), rejecting H1. REM generates BTB because cash inflations don't alter taxable income, preserving the book-tax gap. ETR remains

unaffected as tax liabilities reflect statutes independent of short-term operational shifts like REM. Real activities like sales timing systematically widen BTD by asymmetrically affecting accounting and taxable income. This finding is supported by liquidity theories (Dhaliwal et al., 2005) and earnings management motives (Mulyadi & Anwar, 2015), challenging the dogma that tax avoidance is solely driven by accruals manipulation.

Profitability (ROA) exhibits paradoxical effects: its significant negative coefficient in the ETR model ( $\beta = -0.602$ ;  $t = -5.69^*$ ) confirms that highly profitable firms engage in aggressive tax planning (e.g., transfer pricing), consistent with the Political Cost Hypothesis (Watts & Zimmerman, 1986). For BTD, ROA is the dominant driver with a strongly positive coefficient ( $\beta = 0.870$ ;  $t = 110.93^*$ ). Growth is insignificant for ETR but negatively significant for BTD ( $\beta = -0.001$ ;  $t = -1.92^*$ ), suggesting high-growth firms face stricter regulatory scrutiny. Leverage and Firm Size (Size) are insignificant in both models, contradicting conventional theories that debt acts as a tax shield or that size influences tax complexity. The pandemic (Covid) had no impact on ETR but a significant negative effect on BTD ( $\beta \approx 0$ ;  $t = -1.10^{**}$ ), reflecting firms' shift to survival mode during the crisis.

The ETR-Accruals Management regression model demonstrates collective significance via an F-statistic of 6.76 ( $p=0.0000$ ), proving the independent variables jointly predict Effective Tax Rate variation. Conversely, the BTD-Accruals Management model achieves exceptional explanatory power—near-perfect in accounting for book-tax gap variation—a rare phenomenon in accounting research. This model's significance is reinforced by an F-statistic of 2335.04 ( $p=0.000$ ). The extreme contrast between ETR's explanatory power (9.81%) and BTD's (97.41%) underscores the dominance of internal factors in shaping fiscal gaps, whereas effective tax policies are more influenced by hard-to-measure external elements.

In the ETR model, Accruals Management (M) is statistically insignificant, leading to H1's rejection. This refutes hypotheses that accrual manipulation effectively reduces tax burdens and contradicts earnings studies (Graham et al., 2012; Wang & Cheng, 2012), Dyreng et al. (2010), and research linking tax avoidance to earnings management (Balasubramanyan et al., 2013; Bornemann et al., 2012; De Luca & Paolone, 2019; Mari et al., 2016). The primary reason is that accrual manipulation typically aims for financial statement window-dressing rather than sustainable tax strategies (Abella et al., 2023). In the BTD model, Accruals Management also proves insignificant, again rejecting H1. This aligns with recent studies (Kałdoński & Jewartowski, 2020; Richardson et al., 2016; Wang & Mao, 2021) finding a positive relationship between EM and ETR. While firms may use tax planning to reduce liabilities, high tax aggressiveness risks widening BTD triggering regulatory scrutiny (Badertscher et al., 2009) and firms avoid deviating significantly from industry averages to deter tax authority/investor suspicion (Armstrong et al., 2019). Blaylock et al. (2012) note that highly tax-aggressive firms (identified via low BTD/ETR) often simultaneously employ earnings manipulation and tax avoidance strategies. Consequently, tax systems are increasingly resistant to accrual-based manipulation, urging tax authorities to shift towards operationally grounded investigations.

**Table 4. Effect of Tax Avoidance (ETR; BTD) on Earnings Management (REM; M)  
Moderated by Women on Board Representation**

Dependen Variabel	Dependen Variabel
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Independen Variabel	ETR Coef. t-value	BTD Coef. t-value	ETR Coef. t-value	BTD Coef. t-value	
Const.	0,084 -0,57	0,007 -0,66	0,116 -0,8	0 -0,04	
REM	-0,27 -0,73	0,008 -2,95			**
M			-0,012 -0,32	0 -0,53	
WD	-0,066 -1,27	0,007 -1,92	-0,018 -0,18	0,001 -0,2	*
REMWD	-0,095 -0,62	0,007 -0,66			
MWD			0,014 -0,39	-0,002 -0,58	*
Growth	0,008 -1,17	-0,001 -1,73	0,01 -1,39	-0,001 -2,46	***
lev	0,004 -1,14	0 -0,65	0,004 -1,16	0 -0,68	
Roa	-0,6 -5,58	0,87 -109,38	-0,549 -5,48	0,859 -114,19	*
Size	0,007 -1,42	0 -1,08	0,006 -1,17	0 -0,24	
Covid	0,002 -0,13	-0,003 -2,02	0,002 -0,1	-0,003 -1,84	
F test	5,39	1810,11	5,17	1714,52	
Adj R-squared	0,085	0,975	0,081	0,974	
N	380	380	380	380	

Note: \*, \*\*, \*\*\* refer to significance at a 10%, 5% and 1% level, respectively. One-tail test

The subsequent regression models examining REM, ETR and BTD incorporating WD (Women board representation) reveal extreme contrasts. These highlight that the book-tax gap (BTD) is almost entirely explained by model variables, whereas effective tax policy (ETR) is predominantly influenced by factors beyond corporate control. In the ETR model, Real Earnings Management (REM) remains statistically insignificant, confirming that real activity manipulations (e.g., R&D cuts) lack systematic impact on reducing tax burdens. This aligns with Irawan et al. (2020) but contradicts Dakhli (2022), who posited that gender diversity reduces tax avoidance. Conversely, in the BTD model, REM exhibits a significantly positive coefficient, proving activities like sales timing widen the book tax gap. REM manipulates real operations to meet earnings targets, directly affecting accounting income and book tax differences consistent with Wang et al. (2018) and Amidu et al. (2019). H2 is rejected for both models due to insufficient evidence that REM consistently influences tax avoidance.

The role of Women on Board (WD) yields weak signalling regarding tax avoidance (BTD). Studies by Hoseini et al. (2019) and Jarboui et al. (2020) contend that increased female

representation reduces tax avoidance, as women directors tend towards more prudent, less risky tax decisions. However, WD fails to moderate the REM tax avoidance relationship. For ETR, WD and the REM×WD interaction term are insignificant, refuting resource dependence theory. For BTD, WD shows a significantly positive coefficient (indicating women board presence increases BTD), while the REM×WD interaction remains insignificant. This moderation failure as explained by Hoseini et al. (2019) and Jarboui et al. (2020) suggests women directors are relegated to tokenistic roles without genuine oversight power in fiscal decision-making. H2 is rejected due to lacking empirical evidence that WD weakens REM's effect on tax avoidance.

Profitability (ROA) consistently dominates: its significant negative coefficient for ETR confirms profitable firms pay less tax, while its strongly positive coefficient for BTD indicates they widen fiscal gaps (Desai & Dharmapala, 2006). Growth is insignificant in both models. Leverage and Firm Size (Size) show no effect, contradicting debt tax shield theory and political cost hypotheses. The pandemic (Covid) has no ETR impact but a significantly negative effect on BTD, suggesting narrowed tax gaps during crises as firms prioritise survival

The subsequent models examining Accruals Management (M), ETR and BTD incorporating WD show statistical significance for ETR ( $F=5.17$ ;  $p=0.000$ ) but limited explanatory power ( $R^2=10.08\%$ ). This indicates dominance of external factors (e.g., political connections, operational complexity, transfer pricing) in shaping Effective Tax Rates. Conversely, the BTD model achieves exceptional explanatory strength ( $R^2=97.42\%$ ; Adj.  $R^2=97.37\%$ ), reinforced by an F-statistic of 1742.52 ( $p=0.000$ ). This confirms nearly all book tax gap variation stems from internal corporate factors a rare result in accounting research underscoring the fundamental asymmetry between tax policy (ETR) and fiscal gap (BTD) determinants.

In the ETR model, Accruals Management (M) is statistically insignificant – contradicting Purba (2018) but aligning with Richardson et al. (2016) and Chen et al. (2019) on women directors' ethical oversight. H2 is rejected with no evidence that M influences tax avoidance (ETR). For BTD, M also proves insignificant, consistent with Delgado et al. (2023) but opposing Wang & Cheng's (2012) positive correlation findings. H2 is again rejected as accrual manipulation doesn't affect fiscal gaps (BTD). Profitability (ROA) remains the sole consistent driver: its robust negative ETR coefficient confirms profitable firms pay less tax, while its strongly positive BTD coefficient indicates widened fiscal gaps (Desai & Dharmapala, 2006; Konečná & Andrejovská, 2020).

Women on Board (WD) fails to moderate the M tax avoidance relationship in both models. For ETR, WD and the M×WD interaction are insignificant refuting Richardson et al. (2016) and Chen et al. (2019) on women directors' ethical oversight. For BTD, WD and M×WD are similarly insignificant, opposing Vacca et al. (2020) and Pertiwi et al. (2020) who claimed gender diversity reduces tax aggressiveness. H2 is rejected for both models due to low women representation (mean: 10.9%) and patriarchal bureaucratic structures constraining their strategic fiscal influence. Growth is insignificant for ETR but negatively significant for BTD, reflecting reputational risk minimisation in high-growth firms. Leverage shows no effect in either model, contradicting conventional debt tax shield theory. Firm Size (Size) is insignificant, rejecting political cost hypotheses and Thomsen & Watrin's (2018) findings on operational scale effects. The pandemic (Covid) has no ETR impact but marginal negative significance for BTD, indicating narrowed tax gaps during crises as firms focus on survival.

## Additional Analysis

**Table 5. Effect of Tax Avoidance (ETR; BTD) on Earnings Management (REM; M)  
Moderated by Presence of a Female Chief Executive Officer**

Independen Variabel	Dependen Variabel			Dependen Variabel		
	ETR Coef. t-value	BTB Coef. t-value		ETR Coef. t-value	BTB Coef. t-value	
Const.	0,059 (0,40)	0,097 (0,64)		0,097 0,67	0,001 (0,09)	
REM	-0,029 (-0,88)	0,000 (3,79)	***			
M				0,000 -0,07	0,000 (0,16)	
D_WD	-0,032 (-1,18)	-0,064 (0,57)		-0,064 -0,66	0,002 (0,33)	
REMD_WD	-0,107 (-0,89)	-0,014 (-1,67)	*			
MD_WD				-0,014 -0,37	0,000 (0,14)	
Growth	0,009 (1,31)	0,011 (-1,82)	*	0,011 1,48	0,011 (1,48)	
lev	0,003 (1,10)	0,004 (-0,72)		0,004 1,15	0,000 (-0,67)	
Roa	-0,602 (-5,65)	-0,550 (110,16)	***	-0,550 -5,51	0,860 (114,42)	***
Size	0,008 (1,56)	0,007 (-0,99)		0,007 1,3	0,000 (-0,36)	
Covid	0,005 (0,26)	0,004 (-2,13)	**	0,004 0,2	-0,003 (-1,90)	*
F test	5,46	1813,52		5,22	1739,94	
Adj R- squared	0,0863	0,9746		0,0819	0,9735	
N	380	380		380	380	

Note: \*, \*\*, \*\*\* refer to significance at a 10%, 5% and 1% level, respectively. One-tail test

Based on four regression models (Table 5) – which incorporate the presence of a women CEO as a moderating dummy variable (coded 1 if present, 0 otherwise) earnings manipulation exhibits limited influence. Accruals Management (M) demonstrates no significant effect on tax avoidance (for either ETR or BTB). Conversely, Real Earnings Management (REM) significantly increases BTB (+0.009, p=0.000), thereby widening the tax gap, though it remains insignificant for ETR. This indicates firms prioritise real-transaction strategies (e.g., sales deferrals or R&D cuts) over accounting manipulations for tax avoidance purposes. Gender diversity transcends mere numerical representation it necessitates meaningful empowerment. Without this, female board presence becomes merely tokenistic



in the tax avoidance landscape. Women representation (WD) and women CEO presence (D\_WD) both prove statistically insignificant: neither directly influences tax avoidance (ETR or BTD) nor moderates the relationship between earnings manipulation (M/REM) and tax avoidance. This failure stems from persistently low women representation (mean: 11.87%), exclusion from strategic roles (e.g., Audit Committees), and limited authority to influence tax policy. ROA emerges as the principal determinant of tax avoidance across all regression models. Higher corporate profits correlate strongly with increased tax avoidance aggressiveness. A key driver is that highly profitable firms possess greater resources to facilitate avoidance (e.g., specialised tax consultants, cross-jurisdictional arrangements).

## CONCLUSION

Surprisingly, earnings management exhibits no significant effect on ETR. Both Real Earnings Management (REM) and Accruals Management (M) demonstrate no systematic impact on reducing tax burdens, leading to the rejection of the initial hypothesis (H1). However, Real Earnings Management (REM) significantly increases BTD, indicating that manipulations of real activities such as sales deferrals widen the accounting taxable income gap. Based on panel data regression analysis, this study reveals that profitability (ROA) is the dominant and consistent factor influencing corporate tax avoidance in Indonesia. High ROA shows a significant negative association with the Effective Tax Rate (ETR), demonstrating that highly profitable firms tend to pay proportionally lower taxes. Conversely, ROA exhibits a strongly positive relationship with Book Tax Differences (BTD), suggesting high profitability widens the accounting-taxable income divergence.

The moderating variable, Women on Board (WD), fails to moderate the relationship between earnings management and tax avoidance. Interaction terms ( $REM \times WD$  /  $M \times WD$ ) are insignificant across all models, whilst women board representation shows only a marginally positive effect on BTD contradicting theoretical expectations. This failure is suspected to stem from the low representation of women on Indonesian corporate boards (averaging merely 10.9%). Among control variables, corporate growth (Growth) significantly reduces BTD, indicating high-growth firms avoid aggressive tax practices to minimise reputational risk. The Covid impact is observed through reduced BTD during the pandemic, likely due to firms prioritising business continuity over tax engineering. Meanwhile, leverage, firm size, and Covid's effect on ETR prove insignificant, challenging debt tax shield theory and political cost hypotheses.

The primary policy implication necessitates Indonesia's tax authority (DJP) prioritising audits for firms with ROA >8.53% (per descriptive analysis) due to systemic tax avoidance risks. Regulators should also focus on real activities and BTD analysis, given accruals management's irrelevance as a tax avoidance indicator. Enhanced female board representation remains unproven as effective; alternative approaches – such as increasing corporate tax policy transparency are thus warranted.

Collectively, these findings reflect Indonesia's unique context where profitability drives tax avoidance, whilst earnings management practices and board gender diversity lack strategic influence. The low significance of non ROA variables underscores the complexity of tax dynamics not yet fully quantifiable in empirical models.

## Appendix : BTD Variable Definitions

Variable Name	Variable definition and measurement procedure
DSRI (Days' Sales in Receivables Index)	<p>DSRI is calculated by taking the ratio of current-year receivables efficiency to prior-year receivables efficiency.</p> $DSRI = \frac{\left( \frac{\text{Piutang Bersih } t}{\text{Penjualan } t} \right)}{\left( \frac{\text{Penjualan Bersih } t-1}{\text{Penjualan } t-1} \right)}$
GMI (Gross Margin Index)	<p>The GMI is calculated by comparing the prior year's gross margin (t-1) to the current year's gross margin (t).</p> $GMI = \frac{\text{Margin Kotor } t-1}{\text{Margin Kotor } t} = \frac{\left( \frac{\text{Penjualan } t-1 - \text{HPP } t-1}{\text{Penjualan } t-1} \right)}{\left( \frac{\text{Penjualan } t - \text{HPP } t}{\text{Penjualan } t} \right)}$
AQI (Asset Quality Index)	<p>The AQI quantifies year-over-year changes in a company's asset composition by comparing the proportion of non-physical assets to total assets between consecutive fiscal periods.</p> $AQI = \frac{\left( \frac{\text{Aset Non Fisik } t}{\text{Total Aset } t} \right)}{\left( \frac{\text{Aset Non Fisik } t-1}{\text{Total Aset } t-1} \right)}$
SGI (Sales Growth Index)	<p>The Sales Growth Index quantifies annual revenue expansion or contraction by comparing current-year sales to the prior year's sales. It is calculated as the ratio of total sales revenue in the current fiscal year (t) to total sales revenue in the immediately preceding fiscal year (t-1)</p> $SGI = \frac{\left( \frac{\text{Penjualan } t}{\text{Penjualan } t-1} \right)}{\left( \frac{\text{Penjualan } t-1}{\text{Penjualan } t-1} \right)}$
DEPI (Depreciation Index)	<p>The Depreciation Index assesses changes in a company's asset depreciation methodology by comparing the prior year's depreciation rate to the current year's depreciation rate</p> $DEPI = \frac{\left( \frac{\text{Penyusutan } t-1}{\text{PPE Kotor } t-1} \right)}{\left( \frac{\text{Penyusutan } t}{\text{PPE Kotor } t} \right)}$
SGAI (Selling, General & Administrative Expense Index)	<p>The SGAI evaluates changes in operational efficiency by measuring year-over-year shifts in the proportion of SG&amp;A expenses relative to total sales revenue.</p> $SGAI = \frac{\left( \frac{\text{SG\&A } t}{\text{Penjualan } t} \right)}{\left( \frac{\text{SG\&A } t-1}{\text{Penjualan } t-1} \right)}$

The Leverage Index assesses year-over-year changes in a company's financial leverage by comparing the current debt-to-assets ratio to the prior period's ratio

$$\text{LVGI (Leverage Index)} = \frac{\left( \frac{\text{Total Hutang } t}{\text{Total Aset } t} \right)}{\left( \frac{\text{Total Hutang } t-1}{\text{Total Aset } t-1} \right)}$$

TATA quantifies the proportion of earnings derived from non-cash accounting adjustments relative to a company's asset base

$$\text{TATA (Total Accruals to Total Assets)} = \frac{\left( \frac{\text{Laba Bersih } t - \text{Arus Kas Operasi } t}{\text{Total Aset } t} \right)}{\left( \frac{\text{Total Aset } t}{\text{Total Aset } t} \right)}$$

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