EARNINGS MANAGEMENT AND TAX AVOIDANCE IN THE CONTEXT OF SUSTAINABILITY: EVIDENCE FROM MANUFACTURING FIRMS

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Abstract

This study investigates the impact of earnings management, focusing on discretionary accruals, on corporate tax avoidance among manufacturing firms listed on the Ho Chi Minh Stock Exchange (HOSE) during the period 2018–2022. This study is contextualized within the Vietnamese government's 30 percent corporate income tax (CIT) reduction policy implemented to support businesses during the COVID-19 pandemic. We employ feasible generalized least squares (FGLS) regression models to analyze the relationship between earnings management and tax avoidance, using two proxies: the cash effective tax rate (*CASH_ETR*) and book-tax differences (*BTD*) (Chen et al., 2019; Delgado et al., 2023). Our findings show that firms that engage in higher levels of earnings management are more likely to avoid taxes. Furthermore, we observe that firm size and profitability moderate this relationship, reducing the extent to which earnings management influences tax avoidance. By contrast, the economic downturn during the pandemic period appears to intensify the effect, suggesting that firms may exploit financial downturns as a justification for more aggressive tax strategies. These results highlight the complex interaction between financial reporting behavior and tax compliance, particularly under economic and policy-driven pressures. The findings offer insights for policymakers and regulators aiming to strengthen tax enforcement and improve transparency in corporate financial reporting in developing markets, such as Vietnam.

Keywords: Earnings Management, Tax Avoidance, Manufacturing Firms, Vietnam

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1. INTRODUCTION

"Earnings management is the purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain" (Schipper, 1989, p. 92). Firms frequently adopt income management techniques to make their earnings more appealing to investors when they

want to seek investments. As a result, these practices mislead stakeholders regarding the underlying economic performance of the company (Healy & Wahlen, 1999; Sargsyan & Seissian, 2024). Tax avoidance refers to the strategic arrangement of a taxpayer's affairs to minimize tax obligations (Jaya et al., 2025; Payamta et al., 2024; Sulfia & Rusmanto, 2024). Although these arrangements may be legal, they often conflict with the intent of tax legislation (Vlcek, 2019). Companies that manipulate profits using various accounting techniques tend to adopt approaches to lower effective tax rates (ETR). Consequently, firms that inflate profits may also be inclined to explore methods to reduce their tax obligations. Therefore, researching how earnings management impacts tax avoidance is important because of its implications for investors and stakeholders as well as for improving tax polity and regulatory oversight (MacCarthy, 2021).

Numerous studies have investigated the relationship between earnings management and tax avoidance, but their empirical findings have been inconsistent. Although many studies have found positive impacts of earnings management on tax avoidance (Wang & Chen, 2012; Amidu et al., 2019; Purba, 2018; Delgado et al., 2023); some have reported negative relationships (Guenther et al., 2017; Wang & Mao, 2021); while others have found no relationship (Syanthi et al., 2013). We identified three main causes of this situation: 1) previous studies are put under different contextual settings, the majority of them focused on countries such as the USA, China, Indonesia, and Ghana (Delgado et al., 2023); 2) previous studies lack a focus on specific sectors, which might distort the results as there might be variations in earnings management and tax avoidance techniques used for different sectors (Amidu et al., 2019; Purba, 2018); and 3) previous literature needs further exploration into the relationship to find moderating impacts of other firm or economic elements.

In this study, we examine the impact of earnings management on tax avoidance in Vietnam using a sample of manufacturing firms from 2018 to 2022, in the context of tax reduction incentives during the COVID-19 pandemic. We used feasible generalized least squares (FGLS) regression models to estimate the impact and performed different measures to ensure the robustness and reliability of the results.

We have contributed to the literature by accounting for the limitations mentioned earlier. First, we base our study on Vietnam, a developing country with specific socioeconomic settings. The Vietnamese economy is a socialist-oriented market economy that combines market mechanisms with state intervention to achieve socialist goals. This significant state intervention might significantly affect firms' earnings management and tax avoidance practices as well as the regulatory mechanisms of the state. Second, we explore the relationship using a sample from one sector, the manufacturing sector, to avoid sector heterogeneity and provide better insights. Third, in addition to estimating the main impact of earnings management on tax avoidance, we examine three moderating factors–firm size, profitability, and COVID-19 economic downturns–and how they influence the relationship. These analyses deepen our understanding and enable us to provide practical recommendations for firms and regulatory bodies.

We are also aware of the limitations of our study, including not accounting for other sub-industry and economic factors that might affect tax avoidance and the limited sample period, which suggests further research.

The remainder of this paper is organized as follows. Section 2 reviews the theoretical framework and previous literature on how earnings management impacts tax avoidance. Section 3 presents the data, model specifications, and estimation methods used in this study. Section 4 reports and discusses our results. Section 5 concludes the study and provides relevant recommendations and policy suggestions.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Theoretical framework

A tax is a business expense that reduces profitability, which is unfavorable for shareholders. Consequently, business owners may engage in both legal (tax avoidance) and illegal (tax evasion) strategies to minimize tax liabilities. While tax avoidance exploits loopholes in tax laws to reduce tax payments legally, tax evasion involves unlawful activities that violate tax regulations (Duhoon & Singh, 2023). Kim (2008) further clarifies that tax evasion exploits legislative weaknesses to reduce the tax burden.

The terms "tax aggressiveness" and "tax avoidance" are often used interchangeably, although they lack a universal definition (Delgado et al., 2023). Tax avoidance refers to a continuum of strategies, ranging from legal to more aggressive practices (Hanlon & Heitzman, 2010). Tax avoidance often involves financial transactions that reduce tax liabilities and increase cash flow and reported profits, aligned with shareholder interests (Dyreng et al., 2008). Tax avoidance may also raise risks, such as higher future stock volatility (Guenther et al., 2017), increased borrowing costs due to perceived risks (Shevlin et al., 2013), negatively affecting firm value unless moderated by profitability and growth (Zhang et al., 2018).

However, tax evasion exploits legal ambiguities and often involves illegal activities, such as false claims, undeclared business activities, record manipulation, and income misrepresentation (Putra & Jati, 2018).

The impact of earnings management on tax avoidance is explained by two main arguments: 1) agency theory and 2) political cost theory. Under agency theory, due to the inherent conflicts of interest between shareholders seeking returns and managers seeking bonuses (Jensen & Meckling, 1976), shareholders might encourage managers to minimize taxable income and incentivize them with bonuses (Hanlon & Heitzman, 2010; Rego & Wilson, 2012). Managers might use their discretion in accounting methods and estimations to reduce taxable income legally. Specifically, managers can use techniques such as accelerated depreciation, inventory intensity management, or increasing provisions for doubtful debt to achieve their goals (Badertscher et al., 2013).

According to political cost theory, firms tend to use earnings management techniques to reduce their exposure to political scrutiny or regulatory interventions, including taxation (Watts & Zimmerman, 1985). Watts and Zimmerman (1985)

argue that larger and more successful companies often face increased legal scrutiny and greater asset transfers than smaller firms. To mitigate these political costs, larger businesses frequently adopt accounting methods that lower reported income more than smaller businesses or decrease the extent of asset transfers (Zimmerman, 1983). Political expenses, described as one of a company's most significant non-contractual costs (Bernhagen, 2020), drive companies to seek ways to minimize these expenditures.

Corporate income tax (CIT) is a component of political costs and contributes to the overall expenses borne by a company. Larger and more profitable companies encounter higher ETR and increase CIT obligations (Watts & Zimmerman, 1985). Earnings management, often measured through discretionary accruals, allows managers to manipulate these accruals to reduce taxable income and CIT expenses during the reporting period.

2.2. Empirical findings

The literature on earnings management and tax avoidance reveals the complexity of the relationship across different contexts and regulatory frameworks. Despite a considerable number of studies relating to this topic, previous literature presents inconsistencies in findings resulting from variations in variable measurements, estimation methods, and sample selections.

Regardings inconsistencies in findings, though many papers reported positive impacts of earning management on tax avoidance (Wang & Chen, 2012; Amidu et al., 2019; Purba, 2018; Delgado et al., 2023; Sánchez-Ballesta & Yagüe, 2021; Thalita et al., 2022); some studies found negative relationships (Guenther et al., 2017; Wang & Mao, 2021); others resulted in no relationship (Syanthi et al., 2013; Sadjiarto et al., 2024).

Regarding variation in variables measurements, though most studies used ETR or book-tax difference (BTD) as proxies for tax avoidance (Wang & Chen, 2012; Wang et al., 2018); some studies used different approaches such as the disparity between the statutory tax rate and the ETR (Amidu et al., 2019) or the discretionary permanent book-tax differences (DTAX) (Kubick & Masli, 2016). Furthermore, the results varied for different tax avoidance measures in the same study (Delgado et al., 2023).

Regarding variations in estimation methods, the majority of studies used linear regression methods (Wang & Chen, 2012; Amidu et al., 2019; Purba, 2018; Thalia et al., 2022); some studies suggested non-linear relationships and used methods such as artificial neural networks (ANN) (Delgado et al., 2023). However, Delgado et al. (2023) only revealed a nonlinear trend and found a substantial positive correlation between earnings management and ETR measures.

Regarding sample selections, most studies focused on single-country examinations, such as those in the USA (Kubick & Masli, 2016; Guenther et al., 2017), China (Wang & Chen, 2012; Wang et al., 2018; Wang & Mao, 2021), Indonesia (Purba, 2018; Sadjiarto et al., 2024; Thalita et al., 2022), and Ghana (Amidu et al., 2019). Several studies have examined groups of countries, mostly focusing on European areas, such as the studies of Delgado et al. (2023) on Germany, the UK, France, Italy, and Spain, and Gregova et al. (2021) on V4 countries (Czech Republic, Hungary, Poland, and Slovakia), Sánchez-Ballesta and Yagüe (2021) on Spanish small and medium-sized enterprises (SMEs). Moreover, the majority of the research used cross-industry samples, while only some focused on specific sectors, such as the financial sector (Amidu et al., 2019) or manufacturing sectors (Purba, 2018).

Despite valuable insights from the literature, the relationship between earnings management and tax avoidance requires further exploration. First, most studies concentrated on specific nations such as the USA, China, Indonesia, or European countries, which raises the question of the probability of results generalization for other economies, especially for countries with particular socioeconomic settings such as Vietnam. Second, most studies used data from various sectors to examine the relationship, which might not account for the distinct characteristics and tax avoidance strategies of a specific sector. Third, the inconclusive empirical findings suggest further exploration of the relationship to find the moderating impacts of other firms or economic elements.

From the above literature review, we form the following hypothesis:

H1: Earning management has an impact on tax avoidance.

3. RESEARCH METHODOLOGY

3.1. Data

This research investigated the data of 145 manufacturing companies on the Ho Chi Minh Stock Exchange (HOSE) in Vietnam, using data sourced from VietstockFinance, covering the period from to 2018–2022, which is under the context of tax support policy by the Tax Administration during the COVID-19 pandemic. Hence, this study investigates the impact of earnings management (*EM*) on the tax avoidance (*TA*) of manufacturing companies during this period. In total, 665 observations were collected to run the quantitative model.

We chose the 2018–2022 period for the investigation for several reasons. First, this period witnessed various regulatory changes in Vietnam, such as revisions to the Corporate Income Tax Law and the compulsory implementation of electronic invoices in 2018, which significantly affected enterprises' tax compliance and avoidance activities. Second, Vietnam announced a plan for voluntary adoption of International Financial Reporting Standards (IFRS) in 2022, which potentially impacts firms' earnings and tax planning management strategies. Third, the COVID-19 pandemic hit Vietnam in 2020, resulting in economic disruption and pressuring firms to engage in earnings management and tax avoidance in order to maintain their financial positions. Finally, the research period witnessed the advancement of digitalization and technology, which provided firms with sophisticated tools for tax planning and earnings management.

3.2. Model specification

Supplementary to *EM* and *TA* is impacted by various control variables (Delgado et al., 2023). The baseline model used in this study is as follows below.

$$TA_{it} = \alpha + \beta_1 EM_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 ROA_{it} + \beta_5 INVINT_{it} + \beta_6 CAPINT_{it} + \beta_7 BIG4_i + \beta_8 GROWTH_t + \beta_9 INF_t + \varepsilon_{it} \quad (1)$$

where, TA_{it} represents the tax avoidance level of firm i at time t and EM_{it} represents earnings management. Firm-level control variables include LEV_{it} — leverage ratio, $SIZE_{it}$ — firm size, ROA_{it} — profitability, $INVINT_{it}$ — inventory intensity, $CAPINT_{it}$ — capital intensity, and $BIG4_i$ — role of the Big4 editors. The macro-level control variables include: $GROWTH_t$ — gross domestic product (GDP) growth of Vietnam at time t, and INF_t — inflation rate. Finally, ε_{it} represents the error terms.

3.2.1. Dependent variables

In detail, the dependent variable — tax avoidance (TA) was measured by cash effective tax rate ($CASH\_ETR_{it}$) (Chen et al., 2019) and book-tax differences (BTD_{it}) (Tang, 2015; Delgado et al., 2023) calculated as follows:

$$CASH\_ETR_{it} = \frac{Income\ taxes\ paid_{it}}{Pretax\ income_{it}} \quad (2)$$

$$BTD_{it} = \frac{(Pretax\ income_{it} \times STR_t) - Total\ income\ taxes_{it}}{Average\ total\ assets_{it}} \quad (3)$$

where, STR_t denotes the statutory tax rates of the country at time t.

3.2.2. Independent variables

We proxy earnings management by discretionary accruals ($ACCRUALS$) calculated using the Jones model adjusted to ROA (Kothari et al., 2005). Discretionary accruals are calculated using the following equation:

$$TACC_{it} = \alpha_0 + \alpha_1(1|TA_{it-1}) + \alpha_2(\Delta REV - \Delta AR)_{it} + \alpha_3 PPE_{it} + \alpha_4 ROALAG_{it} + \varepsilon_{it} \quad (4)$$

where, $TACC_{it}$ is the total accuracy; TA_{it-1} is the total assets; ΔREV is the difference in sales between year t - 1 and year t; ΔAR is the difference in accounts receivable between year t - 1 and year t; PPE_{it} refers to the total value of property, plant, and equipment; and $ROALAG_{it}$ is the ratio of earnings before income tax to the previous year's total assets.

3.2.3. Control variables

Some firm and economic factors may significantly influence companies' tax avoidance activities. Adopting approaches from previous studies (see Table 1), we included the following controls.

Table 1. Control variables

Variables	*Description*	*Measurement*	*References*
SIZE	Company size	Logarithm of total asset	Putra and Jati (2018)
LEV	Leverage	Total debt / total asset	Kalbuana et al. (2020)
CAPINT	Capital intensity	Gross property, plant, and equipment (PPE) / total asset	Delgado et al. (2023)
INVINT	Inventory intensity	Inventories / total asset	Delgado et al. (2023)
ROA	Return on asset	Earning before tax / total asset	Akbar and Thamrin (2020)
BIG4	Big4 role	1 = firms are audited by Big4, 0 = firms are not audited by Big4	Nguyen et al. (2020)
INF	Inflation	Inflation rate	Nguyen et al. (2020)
GROWTH	GDP growth	GDP growth rate	Nguyen et al. (2020)

• *Company size*. Firm size is a critical determinant of tax avoidance practice. Sucahyo et al. (2020) argue that the larger the firm, the more it engages in complex transactions, which increases opportunities for exploiting tax loopholes and engaging in tax avoidance activities. On the other hand, Sumaryati and Prawitasari (2020) state that larger firms face higher corporate social responsibility and tax obligations, discouraging them from aggressive tax planning strategies. Specifically, larger firms are more likely to pay higher ETR and engage in less tax avoidance because of the increased scrutiny and political costs associated with their size and visibility (Salman, 2018).

• *Leverage*. Leverage refers to the method that a company uses to finance its assets through debt or equity. High leverage levels often suggest high degrees of tax avoidance, as companies with high leverage typically fund their assets through loans and have interest expenses deducted from taxable income to reduce tax liabilities (Desai & Dharmapala, 2006). However, empirical findings reveal mixed evidence of the positive impact of leverage of CIT avoidance (Devereux et al., 2018; Hamilah, 2020), negative impact (Kimsen et al., 2018; Delgado et al., 2023), or no impact (Salman, 2018).

• *Capital intensity*. Capital intensity reflects a company's investments in fixed assets. A higher level of investment in fixed assets results in higher depreciation expenses, which are then deduced from a company's taxable income, effectively reducing corporate tax liabilities (Fernández-Rodríguez & Martínez-Arias, 2012). Empirical evidence also supports this argument, with studies proving the positive relationship between capital intensity and corporate tax avoidance, such as Salman (2018), Kalbuana et al. (2020), and Delgado et al. (2023).

• *Inventory intensity*. Inventory intensity denotes the investment that a company allocates to inventory. High levels of total inventory lead to increased inventory costs, which are then deducted from a company's taxable income, resulting in lower CIT amounts (Nugrahadi & Rinaldi, 2020). However, Delgado et al. (2023) argue that this factor does not affect tax avoidance levels because stocks do not generate deductible expenses or profits. Previous literature varies, with some studies finding no impact of inventory intensity on tax avoidance (Urrahmah & Mukti, 2021) but while others found significant impacts (Nasution & Mulyani, 2020; Nugrahadi & Rinaldi, 2020).

• *Profitability*. According to Chen et al. (2010), firms with higher profitability have greater

motivation and resources to engage in tax avoidance practices. However, highly profitable firms might be involved in fewer tax avoidance activities, as they are more likely to face higher political scrutiny, regulatory attention, and reputational risks (Zimmerman, 1983; Hanlon & Slemrod, 2009). Empirical evidence also varies, with studies reporting positive effects (Maula et al., 2019) and negative effects (Akbar & Thamrin, 2020; Rinaldi et al., 2023).

• *GDP growth*. The literature mostly suggests a positive impact on economic growth and tax avoidance practices (Desai & Dharmapala, 2006; Hanlon & Heitzman, 2010). Favorable economic growth conditions imply increased profits and greater opportunities and resources for tax-planning strategies (Dyreng et al., 2008). However, Gupta and Newberry (1997) argue that economic growth has a negative impact on tax avoidance, particularly in economic downturns, when businesses increase tax-avoiding strategies to secure cash flow and mitigate risk. Empirical findings are also mixed with those of studies that report positive relationships (Delgado et al., 2023) and negative ones (Zhu et al., 2023).

• *Inflation rate*. Most previous studies suggest that inflation has a positive impact on tax avoidance. Feldstein (1983) indicates that inflation increases a company's nominal income, pushing it into higher tax brackets and leading to more tax avoidance activities to counteract the effects of inflation. Desai and Dharmapala (2006) add that high inflation can make debt financing more attractive as interest payments reduce taxable income, leading to more tax avoidance through financial restructuring. However, Boylan and Frischmann (2006) argue that high inflation might reduce tax avoidance because of the increased risk and cost associated with tax planning strategies, which might not outweigh the financial gain.

• *Big4 role*. Agency theory suggests that the involvement of Big4 auditors helps to reduce a company's tax avoidance tendency, as their presence acts as a monitoring mechanism, reducing information asymmetry and ensuring shareholders' financial interests (Jensen & Meckling, 1976). However, the resource-based view argues that Big4 accounting firms with specialized tax expertise, international experience, and significant policy-influencing abilities can help cut clients' ETR or increase tax avoidance levels (Jones et al., 2018). Empirical research provides mixed evidence of the positive impacts of Big4 accounting firms' presence on tax avoidance (Donohoe et al., 2024; Jones et al., 2018), negative impacts (Richardson & Lanis, 2007; McGuire et al., 2012), or no impact (Duhoon & Singh, 2023).

3.3. Estimation method

To estimate the impact of earnings management on tax avoidance in Vietnamese manufacturing firms, we employ different panel estimation techniques, including ordinary least squares (OLS), fixed-effects model (FEM), random-effect model (REM), and FGLS. To ensure robust and reliable results, we attempt to address possible panel data issues.

First, we employed OLS regressions and noticed possible issues of unobserved heterogeneity in the models (Huang, 2018).

Second, to account for unobserved heterogeneity across entities, we used the REM and FEM techniques to estimate the models. We then perform a Hausman test to select the optimal model (Onali et al., 2017). According to Table 2, in terms of *CASH_ETR* and *BTD*, the REM model is optimal for both.

Table 2. Selection of panel data regression models

Estimated panel models	*CASH_ETR*	*BTD*
FEM: F-test		
F-test that all u_i = 0	2.37	0.95
p-value	0.0000	0.6388
REM: Bruesch and Pagan Lagrangian multiplier test		
Chi-bar square statistic	57.51	0.00
p-value	0.0000	1.0000
Hausman test		
Chi-bar square statistic	3.28	10.86
p-value	0.8581	0.1449
Conclusion	REM	REM

Third, we tested for possible issues with REM models, including autocorrelation and heteroskedasticity. Table 3 reports the existence of first-order autocorrelations and heteroscedasticity for the estimated models.

Fourth, to correct for autocorrelations and heteroscedasticity issues, we used FGLS techniques. According to Bai et al. (2021), using the estimated variance-covariance structure from REM, FGLS re-estimates the coefficients adjusting for these issues, which provides more efficient and reliable estimates.

Table 3. Checking the chosen model for errors

Tests	*CASH_ETR*	*BTD*
First-order autocorrelation (Wooldridge test)		
H_0: No first-order autocorrelation		
H1: First-order autocorrelation		
F statistic	12.981	1.215
p-value	0.0004	0.2723
Heteroskedasticity (Bruesch and Pagan Lagrangian multiplier test)		
H_0: Homoscedasticity		
H1: Heteroskedasticity		
Chi-bar square statistic	57.51	0.00
p-value	0.0000	1.0000

Finally, we test for possible endogeneity issues in our models. Endogeneity can occur when the independent variables correlate with the error term resulting from omitted variables, measurement errors of *EM* and *TA*, or simultaneity impacts between the two variables (Wooldridge, 2010). Adopting Tang and Firth's (2012) approach, we estimate the models by employing a two-stage least squares (2SLS) estimator and using lagged variables of tax avoidance and earnings management as instruments. Table 4 presents the results of the Durbin-Wu-Hausman test for endogeneity (Durbin, 1954; Hausman, 1978, Wu, 1973). The Durbin-Wu-Hausman results in Table 4 cannot reject the H_0 of the exogenous regressors; there is no clear evidence regarding the endogeneity between earnings management and tax avoidance in our sample.

Table 4. The Durbin-Wu-Hausman test for endogeneity of regressors

Tests	*CASH_ETR*	*BTD*
H_0: Regressors are exogenous		
Durbin-Wu-Hausman test statistics	0.0008	0.8159
p-value	0.9778	0.3664
Degree of freedom	1	1

Note: The instruments are lagged TA and EM. The test is performed on the earning management variable. The test statistic follows a Chi-squared distribution with p degrees of freedom, where p is the number of regressors tested for endogeneity.

4. RESEARCH RESULTS AND DISCUSSION

4.1. Descriptive statistics

This study used secondary data collected from 145 manufacturing companies' financial statements over a five-year period lasting from 2018 to 2022. We obtained data on manufacturing companies listed on HOSE from VietstockFinance, a reputable data company in Vietnam.

Table 5 presents the descriptive statistics of the sample. The table also shows that both *TA* and *EM* are prevalent practices, with significant variability across firms. Tax avoidance is generally moderate, with firms typically paying taxes, while earnings management exhibits much higher variability, suggesting differing levels of financial manipulation or optimization strategies.

Table 5. Descriptive statistics

Variable	*Obs.*	*Mean*	*Std. dev.*	*Min*	*Max*
CASH_ETR	665	0.192	0.163	0	1
BTD	664	-0.001	0.031	-0.464	0.482
EM	659	0.000	744.313	-7606.064	5799.488
SIZE	664	7.274	1.673	-2.749	12.091
LEV	664	0.901	1.480	0.003	13.094
CAPINT	662	0.220	0.205	0	3.005
INVINT	660	0.222	0.168	0	0.824
ROA	664	0.080	0.094	-0.467	0.514
BIG4	665	0.406	0.491	0	1
GROWTH	665	0.057	0.024	0.026	0.080
INF	665	0.029	0.006	0.018	0.035

Table 6 shows that the majority of correlation coefficients are less than 0.9, with the strongest correlation coefficient (0.585) between the inflation rate variable and the GDP growth rate variable. Therefore, all variables were assumed to be distinct from the data acquired and distinct from the nature of each variable in the research.

Researchers have used the variance inflation factor (VIF) coefficient to calculate collinearity. Table 7 demonstrates that all VIF values are less than 3, indicating that the data for all variables are not biased.

Table 6. Correlation between variables

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
(1) *CASH_ETR*	1.000										
(2) *BTD*	0.139	1.000									
(3) *EM*	-0.084	0.003	1.000								
(4) *SIZE*	0.022	-0.058	-0.148	1.000							
(5) *LEV*	-0.071	-0.009	-0.071	0.051	1.000						
(6) *CAPINT*	-0.037	-0.009	-0.092	0.119	0.043	1.000					
(7) *INVINT*	0.137	0.048	0.027	0.083	-0.057	-0.251	1.000				
(8) *ROA*	-0.087	-0.321	0.000	0.105	0.114	-0.054	-0.016	1.000			
(9) *BIG4*	-0.098	-0.054	-0.035	0.302	-0.002	0.112	0.012	0.078	1.000		
(10) *GROWTH*	0.056	0.066	-0.077	-0.013	-0.005	0.014	0.019	0.024	0.000	1.000	
(11) *INF*	0.064	0.035	-0.086	-0.027	-0.012	0.040	-0.014	0.008	0.000	0.585	1.000

Table 7. Variance inflation factor

Variables	*VIF*	*1/VIF*
CASH_ETR	1.52	0.659
BTD	1.51	0.661
EM	1.22	0.821
SIZE	1.17	0.858
LEV	1.15	0.870
CAPINT	1.11	0.901
INVINT	1.09	0.917
ROA	1.04	0.961
BIG4	1.02	0.979
Mean VIF	1.20	

4.2. Baseline results

Table 8 shows a significant negative relationship between earnings management (*EM*), Big4 auditor role (*BIG4*), profitability (*ROA*), and economic growth (*GROWTH*) on tax avoidance variables and positive significant impacts of inventory intensity (*INVINT*) and inflation (*INF*) on tax avoidance measures.

Table 8. Baseline results

Variables	*CASH_ETR*		*BTD*	
	(1)	*(2)*	*(1)*	*(2)*
EM	-0.0000135***	-0.0000102***	-0.000000476***	-0.000000609***
	(-10.85)	(-7.25)	(-3.98)	(-4.57)
SIZE		-0.0000211		-0.0000819
		(-0.03)		(-1.23)
LEV		-0.00158		-3.55E-06
		(-1.63)		(-0.08)
CAPINT		-0.00245		-0.0000728
		(-0.38)		(-0.21)
INVINT		0.0559***		0.00123***
		(10.09)		(3.44)
ROA		-0.00747		-0.00183**
		(-1.25)		(-2.24)
BIG4		-0.0119***		0.000119
		(-4.03)		(0.77)
GROWTH		-0.0298**		0.000666
		(-2.13)		(0.55)
INF		0.167***		-0.000992
		(3.29)		(-0.23)
Observations	657	657	657	657

*Note: t-statistics in parentheses, * p < 0.1, ** p < 0.05, *** p <0.01.*

Regarding the impact of earnings management on tax avoidance, Table 8 shows consistent negative coefficients across the models and for both tax avoidance measures (*CASH_ETR* and *BTD*). This implies that when companies engage in more aggressive manipulation of their financial statements, they tend to have lower tax rates on their actual cash flows and lower book-tax conformity, which reflects a higher degree of tax avoidance. This finding is consistent with studies by Dyreng et al. (2008) and Guenther et al. (2017), and supported by the majority of previous literature, as reviewed by Owusu et al. (2023). This study confirms the agency theory argument related to the conflict of interest between the company's shareholders and managers. Evidently, managers might engage in earnings management, leading to aggressive tax avoidance to reduce the company's tax burden and present a favorable view of financial performance, which in turn maximizes the company's short-term profits and managers' own compensation while harming long-term shareholder value.

We also found interesting and significant results regarding the relationship between the control variables and tax avoidance. Inventory intensity is found to have a positive relationship with *CASH_ETR* and *BTD*, indicating that firms with higher inventory intensity tend to pay higher cash taxes and have higher book-tax conformity or lower levels of tax avoidance. This supports the findings of Nasution and Mulyani (2020) and suggests that managers in manufacturing firms in Vietnam choose to minimize inventory costs to maximize their profits rather than attempt to maximize the additional costs to reduce the company's tax burden.

Return on assets (*ROA*) negatively impacts *BTD*, consistent with Thomsen and Watrin (2018) and Maula et al. (2019). This finding suggests that more profitable firms are better able to engage in tax planning, thereby reducing their BTD. Our results support the political cost theory, arguing that more profitable companies facing lower tax administration costs could allocate greater resources towards tax planning, ultimately achieving a reduction in their BTD (Chen et al., 2019).

The negative coefficient for Big4 audit firms suggests that companies audited by these firms are more compliant with tax laws and benefit from legitimate tax planning, especially under the government's tax relief policies during the pandemic. Our results are consistent with the arguments of agency theory and the empirical findings of Richardson and Lanis (2007) and McGuire et al. (2012).

We found a negative relationship between GDP growth (*GROWTH*) and *CASH_ETR*, indicating that during periods of rapid economic growth, firms might reduce their ETR by increasing deductible expenses through investments and expansion (Zhu et al., 2023). We also found that higher inflation is associated with a higher ETR, indicating lower tax avoidance, consistent with Richardson and Lanis (2007). This supports Boyland and Frischman's (2006) argument that increased inflation can negatively affect tax avoidance, as it inflates the cost and risk of tax planning strategies that overwhelm the tax benefits received.

4.3. Further analysis

To further understand the impact of earnings management and tax avoidance on manufacturing firms in Vietnam, we tested the moderating effects of firm size, profitability, and economic conditions on the two variables. We rerun the baseline models using the interactive terms $EM \times SIZE\_HL$, $EM \times ROA\_HL$, $EM \times COVID19$. Here, SIZE_HIGHLOW is a dummy variable with 0 representing firms smaller than the average value and 1 for larger firms. *ROA_HIGHLOW* takes a value of zero for firms with lower profitability and one for firms with higher profitability levels. *COVID19* controls for an economic downturn as an impact of the COVID-19 pandemic, taking the value of 1 for the years 2020 and 2021, 0 otherwise. The results of the analysis are presented in Table 9.

Table 9. Further analysis

Variables	Firm size		Profitability		Economic conditions	
	CASH_ETR (1)	BTD (2)	CASH_ETR (1)	BTD (2)	CASH_ETR (1)	BTD (2)
EM	-1.53e-05***	-1.23e-06***	-2e-05***	-7.93e-07***	-8.21e-06***	-3.37e-07***
	(-4.26)	(-3.14)	(-7.97)	(-3.40)	(-5.63)	(-2.99)
EM × SIZE_HL	8.40e-06**	9.65e-07**				
	(2.20)	(2.41)				
EM × ROA_HL			1.49e-05***	4.99e-07*		
			(5.58)	(1.82)		
EM × COVID19					5.84e-07	-5.59e-07***
					(0.25)	(-3.55)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	657	657	657	657	657	657

*Note: t-statistics in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.*

As indicated in Table 9, firm size and profitability help reduce the negative impact of *EM* on both measures of tax avoidance. While *COVID19* helps to increase the negative effects of *EM* on *BTD*. In other words, for larger firms and firms with higher profitability levels, higher earnings management still indicates higher levels of tax avoidance. However, the degree of impact is less than that of smaller and less profitable firms. As discussed by Desai and Dharmapala (2009), larger firms are subject to greater scrutiny from auditors, regulators, investors, and the public, and aggressive earnings management and tax avoidance could lead to greater reputational, legal, and financial risks. Furthermore, firms with higher profitability are more likely to have stronger corporate governance mechanisms, which ensure greater accountability and transparency and the likelihood of earnings management leading to tax avoidance (Klein, 2002). To the best of our knowledge, few empirical studies have examined the moderating role of profitability and size when estimating the impact of earnings management on tax avoidance, particularly for manufacturing sectors in developing countries. Hence, these results make empirical contributions to the current literature.

On the other hand, during the COVID-19 pandemic, firms tended to increase their earnings management and tax avoidance compared to other periods. Our results are consistent with those of Oktyawati et al. (2023) and Kobbi-Fakhfakh and Bougacha (2023). Our findings confirm Ball and Shivakumar's (2005) argument that during periods of uncertainty, firms utilize earnings management leading to tax avoidance to mitigate the impact of declining revenues and profitability and to present a stable financial picture to creditors and investors. Healy and Wahlen (1999) added that increasing earnings management activities during periods of financial distress could be due to managers feeling pressured to meet previous financial targets and preserve their income levels.

5. CONCLUSION

This study examined the impact of earnings management on the tax avoidance of listed manufacturing companies on the HOSE from 2018 to 2022, using the FGLS method. The results reveal that the higher the level of earnings management a company engages in, the higher the level of CIT avoidance. Further analysis shows that the size and profitability of companies lessen the impact of earnings management on tax avoidance, whereas the depressing economic conditions of the COVID-19 pandemic deepens the impact.

We also find significant results for the control variables. Specifically, companies with higher inventory intensity are associated with lower tax avoidance levels, while those with higher ROA levels and audited by the Big4 auditors show higher tax avoidance levels. Economic growth fosters tax avoidance behavior in manufacturing firms, and higher inflation indicates lower tax avoidance.

Our results have several practical and policy implications. For manufacturing companies, our results show that higher earnings management levels lead to higher tax avoidance, consequently exposing them to higher political and reputational risk. Particularly for smaller and less profitable firms, there is a need for closer oversight of the financial activities of firm management to protect shareholder interests. We suggest that tax authorities pay stricter attention and apply tighter administrative measures for firms with lower profitability levels and smaller sizes. Additionally, although tax authorities tend to provide tax incentives in economic downturn phases to boost economic activities, they need to be aware of the increasing tax avoidance behavior in these periods as firms try to protect their financial positions. Finally, as companies audited by the Big4 firms exhibited heightened tax avoidance levels, regulatory bodies should consider stricter auditing standards and rigorous oversight of auditing practices.

Our study has several limitations, including the inability to account for heterogeneity across sub-industries for manufacturing sectors and other external economic factors that can influence the impact of earnings management on tax avoidance. Future research should examine other industries and economic factors that could affect tax avoidance behavior. Moreover, to mitigate the impact of the COVID-19 pandemic on findings, studies could extend the examination periods before and after COVID-19 to analyze earnings management and tax avoidance under both typical and atypical economic conditions.

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