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Article

Optimizing Tax Compliance: Understanding the Link Between Company Tax Administration and Tax Avoidance (A Survey of Public Companies in Indonesia, Malaysia, Singapore, and Thailand for the 2022–2023 Period)

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Abstract

Tax compliance remains a critical issue in corporate taxation research, particularly in understanding the causal link between the administration of corporate tax and tax avoidance. This study investigates the potential simultaneous relationship between the two by analyzing 277 listed firms across four Southeast Asian countries using two-year average data (2022–2023). The administration of corporate tax is measured using eight disclosure-based indicators from the Refinitiv Eikon database, while tax avoidance is proxied by the effective tax rate (ETR). The primary analysis applies multiple regression to assess the effect of tax administration on tax avoidance and logistic regression to evaluate the reverse relationship. To address endogeneity and test for simultaneity, robustness checks using two-stage least squares (2SLS) and instrumental variable techniques are employed. The results confirm a bidirectional relationship: a stronger administration of corporate tax is associated with lower tax avoidance, while tax avoidance behavior also shapes tax administration practices. These findings underscore the importance of strengthening internal tax governance as a foundation for compliance. Given varying levels of tax administration across countries, this study calls for greater international coordination to standardize corporate tax governance practices and reduce avoidance incentives.

Keywords: tax administration; tax avoidance; Southeast Asia; simultaneous equation

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1. Introduction

In recent years, tax avoidance in Southeast Asia has become a significant concern for governments and policymakers. The region's rapid economic growth and increasing integration into the global economy have created opportunities for both individuals and corporations to engage in tax avoidance practices. While often legal, these practices can result in substantial revenue losses for governments and contribute to income inequality (Hossain et al., 2024). Many Southeast Asian countries have been working to improve their tax administration systems and strengthen their tax governance. Recent developments in taxpayer management and governance in Southeast Asia have focused on leveraging technology and improving administrative processes. For instance, several countries in the region have begun implementing e-government initiatives, including electronic tax-filing systems, to enhance efficiency and reduce opportunities for aggressive tax avoidance

(Holliday, 2002). Additionally, there has been growing interest in utilizing artificial intelligence and big data analytics to detect aggressive tax avoidance within complex corporate networks (Nuryani et al., 2024). These technological advancements are complemented by efforts to improve tax administration, increase transparency, and foster a culture of compliance among taxpayers (Malkawi & Haloush, 2008). In recent years, technological advancements, particularly in artificial intelligence (AI), machine learning, and big data analytics, have transformed tax compliance systems globally (Nembe et al., 2024). Tax authorities increasingly rely on AI-driven tools to detect irregularities, automate audits, and identify patterns of corporate tax avoidance (Belahouaoui & Attak, 2024). This evolution in enforcement mechanisms has raised the compliance burden on firms and, at the same time, influenced managerial decisions regarding tax planning and administration.

Despite these efforts, challenges remain in addressing tax avoidance in Southeast Asia. The region's diverse economic landscape, varying levels of national governance quality, and complex corporate structures continue to pose difficulties for tax authorities (Montenegro, 2021; Nuryani et al., 2024). As Southeast Asian countries continue to develop their tax systems, balancing the need for revenue collection while creating an attractive business environment remains a key challenge for regional policymakers.

Research on tax avoidance plays a crucial role in understanding and addressing the complex challenges faced by modern tax systems. As governments worldwide grapple with the need to increase tax compliance and reduce revenue losses, particularly in the aftermath of economic downturns like the COVID-19 pandemic, the importance of this field of study has become increasingly evident (Paleka & Vitezić, 2023). Research on tax administration and compliance behavior provides valuable insights into the factors that influence taxpayers' decisions to evade or comply with tax laws, enabling policymakers to design more effective strategies for improving voluntary compliance (Luttmer & Singhal, 2014). The study of tax avoidance and compliance encompasses a wide range of factors, including individual and corporate taxpayer characteristics, tax administration practices, and the impact of emerging technologies (Belahouaoui & Attak, 2024; Hossain et al., 2024). By examining these aspects, researchers can identify critical gaps in understanding taxpayer heterogeneity and develop more nuanced approaches to addressing non-compliance (Paleka & Vitezić, 2023). Furthermore, research in this field has revealed the significance of non-pecuniary motivations such as tax morale and social norms in shaping compliance behaviors (Luttmer & Singhal, 2014; Pui Yee et al., 2017). In conclusion, tax avoidance research serves as a vital bridge between academic understanding and practical policy implementation. By providing evidence-based insights into the complex dynamics of tax compliance, this study enables tax authorities to develop more targeted and effective strategies to combat avoidance, improve fairness, and ultimately enhance the overall efficiency of tax systems (Belahouaoui & Attak, 2024; Luttmer & Singhal, 2014).

The administration of corporate tax plays a crucial role in ensuring taxpayer compliance, reducing corporate risk, and minimizing the likelihood of tax audits and fraud. Effective tax policies aim to strike a balance between generating revenue for the government and maintaining a favorable business environment. These policies often involve a complex interplay between reporting requirements, audit strategies, and enforcement mechanisms designed to encourage compliance and deter avoidance. Research has shown that partitioning taxable income into multicomponent reports can reduce overall aggressive tax avoidance and increase tax authority net revenue collections compared to single-report models (Rhoades, 1999). This approach allows tax authorities to tailor their audit policies and consider all the tax return information, potentially leading to a more effective detection of non-compliance. However, the impact on predicted avoidance is not uniform across taxpayers, with some reducing avoidance, while others with multiple opportunities may

be more likely to evade when faced with multicomponent reporting requirements. The effectiveness of The administration of corporate tax in ensuring compliance and reducing risk depends on various factors, including the uncertainty surrounding audit probabilities, the severity of penalties, and overall tax morale within the business community. Studies have shown that increasing uncertainty about audit probabilities (ambiguity) can increase tax compliance for ambiguity-averse taxpayers but may reduce compliance for ambiguity lovers (Snow & Warren, 2005). Additionally, the activities of tax enforcement agencies, such as the IRS Criminal Investigation Division, have been found to have a measurable and significant effect on voluntary compliance (Dubin, 2007).

Previous research has not directly addressed the simultaneous influence of company tax administration and tax avoidance. However, some insights can be drawn from the available information. Corporate tax avoidance is influenced by various factors, including firm characteristics, political connections, and corporate social responsibility activities (Duhoon & Singh, 2023). Companies adopt tax avoidance tactics to boost post-tax profits and meet shareholders' expectations (Duhoon & Singh, 2023). At the same time, types of company tax administration, such as tax information systems, tax calculation, and reporting schemes, and specific tax management units, are designed to encourage specific behaviors such as innovation and better compliance (Gao et al., 2015). This suggests a potential bidirectional relationship between tax administration and avoidance behavior. Interestingly, the effectiveness of tax benefits for innovation is largely anecdotal, and the empirical examination of the influence of innovation on firm-level taxation is still underexplored (Gao et al., 2015). This gap highlights the need for further investigation of the simultaneous influence of company tax administration and tax avoidance behaviors. In conclusion, while the provided studies do not explicitly examine the simultaneous influence of company tax administration and tax avoidance, they suggest a complex interplay between the two. This study focuses on this bidirectional relationship to better understand how The administration of corporate tax shapes avoidance behaviors and how these behaviors, in turn, influence the development of the administration of corporate tax.

This research examines the complex interplay between corporate taxpayer tax administration and tax avoidance behaviors. Specifically, this study aims to investigate the potential simultaneous relationship between these two factors, exploring how the administration of corporate tax influences tax avoidance practices and, conversely, how tax avoidance behaviors shape the development and implementation of the administration of corporate tax. By analyzing this bidirectional relationship, this study seeks to provide valuable insights into the dynamics of corporate tax compliance, the effectiveness of current tax administration, and the strategies employed by companies to minimize their tax liabilities. This study contributes to a more comprehensive understanding of the factors driving corporate tax behavior and informs the development of more effective tax administration and enforcement mechanisms.

This research introduces a novel approach to examine the relationship between the administration of corporate tax and tax avoidance behaviors by utilizing data disclosed in annual reports and gathered through the Refinitiv Eikon database. The novelty of this study lies in its exploration of the potential simultaneous and bidirectional relationship between tax administration and tax avoidance practices, moving beyond traditional unidirectional analyses. By leveraging the comprehensive financial data available in the Refinitiv Eikon database, this study conducts a more nuanced and data-driven investigation of how the administration of corporate tax influences tax avoidance strategies, and vice versa. This approach allows for a more holistic understanding of corporate tax behavior, potentially revealing complex interactions and feedback loops that have been previously overlooked. The use of annual report data provides a reliable and standardized source of information,

enhancing the validity and comparability of the findings across different companies and sectors. This innovative methodology yields new insights into the dynamics of corporate tax compliance and the effectiveness of tax administration, contributing to both the academic literature and practical administration formulations.

This study focuses on tax avoidance, defined as the legal reduction of corporate tax liability through strategic planning and the exploitation of regulatory gaps (Duhoon & Singh, 2023). While some prior discussions on corporate tax behavior reference both avoidance and evasion, it is critical to distinguish between the two. Tax evasion involves illegal practices such as the concealment of income or falsification of expenses, whereas tax avoidance operates within the bounds of the law (Alm, 1988). Given that this study analyzes publicly listed companies in regulated markets, it is highly unlikely that any firms in the sample engage in tax evasion.

The rest of the paper is organized as follows: Section 2 presents a brief literature review and research hypotheses; Section 3 describes the research method; Section 4 provides the research results, implications, and discussion; and Section 5 concludes the article.

2. Literature Review and Hypotheses' Development

2.1. Tax Compliance Theory

Corporate tax compliance theory has been extensively studied in relation to tax avoidance, administration, and disclosures. The literature reveals a complex interplay between these factors, highlighting the multifaceted nature of corporate tax behavior. Tax compliance theory posits that firms comply with tax obligations not only because of legal enforcement but also because of perceived fairness, trust in tax institutions, and reputational considerations (Appiah et al., 2024; Farrar et al., 2017). Within this framework, tax administration practices such as transparency, board oversight, and internal risk controls serve as institutional mechanisms that reinforce compliant behavior and reduce the likelihood of aggressive tax planning.

In addition, several accounting theories offer valuable insights into the relationship between tax administration and tax avoidance. Agency theory, for instance, suggests that managers may engage in opportunistic behavior such as tax avoidance to maximize short-term performance or personal gain (Zolotoy et al., 2020). Strong tax oversight and governance structures, such as independent audit committees or tax risk management practices, can mitigate agency conflicts by aligning managerial incentives with shareholder interests (Amara et al., 2025). Legitimacy theory further explains that firms are motivated to demonstrate responsible tax behavior to maintain social legitimacy, particularly in environments with increasing stakeholder scrutiny (Xu et al., 2022). Signaling theory also supports this perspective by emphasizing that firms use tax disclosure and governance mechanisms to differentiate themselves in the eyes of investors and regulators. Companies with low levels of tax avoidance and robust tax governance may use these signals to attract long-term capital, reduce information asymmetry, and establish credibility (Khurana & Moser, 2012). Together, these theoretical lenses help explain how tax administration acts as both a control and communication mechanism that influences the degree of tax avoidance practiced by firms.

Tax avoidance is a significant concern in corporate taxation, ranging from the legitimate use of tax rules to outright violations of tax laws (Wang et al., 2019). The determinants of tax avoidance behavior are diverse and include firm characteristics, political connections, and corporate social responsibility activities (Duhoon & Singh, 2023). Multinational corporations engage in various aggressive tax avoidance strategies such as transfer mispricing, international debt shifting, treaty shopping, tax deferral, and corporate inversions (Beer et al., 2019).

Tax administration plays a crucial role in shaping corporate compliance. Research suggests that a 1 percentage-point lower corporate tax rate expands before-tax income by 1%, an effect that appears to be increasing over time (Beer et al., 2019). However, the impact of tax avoidance on firms' value and performance is mixed, as demonstrated in a study of Vietnamese listed firms (Khuong et al., 2020). A perception and knowledge of taxes' fairness significantly influence corporate taxpayers' willingness to pay taxes and overall tax compliance (Oladipo et al., 2022).

Regarding tax disclosures, mandatory financial transparency has been shown to affect corporate tax avoidance. A study of European multinational banks found that public country-by-country reporting led to increased tax expenses for banks with previously undisclosed activities in tax havens (Overesch & Wolff, 2021). This finding suggests that comprehensive tax transparency can serve as an effective instrument to curb corporate tax avoidance. Corporate tax compliance theory encompasses a wide range of factors that influence tax behavior. While tax avoidance remains a significant issue, research indicates that administrative measures, such as improved transparency and fairness, can enhance compliance.

2.2. Tax Administration

The administration of corporate tax refers to the strategies and approaches adopted by companies to manage their tax obligations within legal frameworks (Gribnau & Jallai, 2017). It encompasses various aspects of tax planning, compliance, and management aimed at optimizing a company's tax position while adhering to regulatory requirements (Pratama & Pratiwi, 2022). The definition of the administration of corporate tax can vary but generally involves a systematic approach to managing a company's tax affairs. This includes decisions on tax planning, risk management, and compliance strategies (R. C. Christensen, 2024). These metrics help companies assess their tax performance and make informed decisions regarding their tax strategies. Interestingly, research has shown that corporate tax avoidance behavior, a key aspect of tax administration, can have contradictory effects on firms' value, market growth, and corporate transparency disclosure decisions (Duhoon & Singh, 2023).

The complex nature of tax administration and its far-reaching nature have implications for various aspects of corporate performance (Pratama, 2022). The administration of corporate tax is a multifaceted concept that involves strategic decision-making to optimize a company's tax position (Rudyanto, 2024). While it aims to minimize tax liabilities, it must also ensure compliance with the legal requirements. The use of KPIs in tax management allows companies to monitor their performance and adjust their strategies accordingly (Chow et al., 2023). However, the impact of aggressive tax management can be double-edged, affecting various aspects of corporate performance and stakeholder perception (Oats & Tuck, 2019).

Recent research has shed light on the increasing importance of tax governance mechanisms in influencing corporate tax behavior. In particular, tax transparency has emerged as a crucial factor in determining a firm's tax planning approach. Companies that demonstrate higher levels of transparency in their tax affairs are generally less inclined towards aggressive tax avoidance strategies (Balakrishnan et al., 2018). This transparency acts as a signal of legitimacy for various stakeholders, including investors, regulators, and the public (Zhang et al., 2022). By openly disclosing their tax practices and policies, firms can build trust and credibility, potentially mitigating the reputational risks associated with perceived tax aggressiveness.

In addition to transparency, an enhanced tax risk oversight has been identified as another key element in shaping responsible corporate tax behavior. Independent board

committees dedicated to overseeing tax-related matters have been shown to play a significant role in reducing opportunistic tax planning (Beasley et al., 2020). These committees can provide a specialized expertise and independent scrutiny of a company's tax strategies, ensuring that they align with broader corporate governance principles and ethical standards. By implementing robust tax governance structures, firms can better manage their tax risks, comply with evolving regulations, and maintain a balance between tax efficiency and corporate social responsibility (Abdelfattah & Aboud, 2020). These insights suggest that internal governance structures and transparency are essential components of an effective administration of corporate tax.

2.3. Tax Avoidance

Tax avoidance is a complex corporate behavior that has garnered significant attention in academic research. It is generally defined as the legal reduction of tax liabilities using various strategies and techniques (Beer et al., 2019). The measurement of tax avoidance typically involves using effective tax rates, calculated by dividing tax expenses by pre-tax income (Chan et al., 2015). The relationship between tax avoidance and corporate governance is both multifaceted and ambiguous. While some studies suggest that strong corporate governance can mitigate the negative consequences of tax avoidance (Bayar et al., 2018), others find a negative association between governance and tax avoidance (Kovermann & Velte, 2021). Interestingly, the impact on firms' value varies across institutional contexts. The positive relationship between tax avoidance and firms' value diminishes in countries with weak corporate governance and high levels of corruption (Tang, 2017). This suggests that the value of tax avoidance is influenced by the heterogeneous agency costs associated with different institutional environments. A literature review of tax avoidance reveals a complex interplay between corporate governance, institutional factors, and firm value (Jiang et al., 2020). While tax avoidance can potentially create value for shareholders, its effects are moderated by various factors, including the strength of corporate governance mechanisms and institutional environment (Ortiz-De-Mandojana et al., 2014).

This study uses ETR as a single proxy to measure tax avoidance due to its widespread acceptance, consistency, and comparability across jurisdictions. The ETR, calculated as the total income tax expense divided by the pre-tax income, captures the effective tax burden borne by firms and reflects the cumulative impact of their tax planning strategies. While alternative proxies, such as cash ETR or book-tax differences, exist, they present notable limitations in multi-country studies. The cash ETR is sensitive to timing differences and volatile payment schedules, which are particularly inconsistent in emerging market contexts (Edwards et al., 2020). However, book-tax differences require granular data not uniformly disclosed across all the firms or countries in this study (Towery, 2017). Moreover, using multiple proxies may introduce methodological inconsistencies and reduce the sample size owing to data's unavailability. Therefore, the use of a standardized, consistently reported measure, such as ETR, ensures robustness and comparability in cross-country analyses while aligning with prior research in the field (Dyreng et al., 2007; Kovermann & Velte, 2021).

While various mechanisms of tax avoidance have been identified in the global literature, including the use of tax shelters, hybrid instruments, and financial engineering, many of these practices are more prevalent in jurisdictions such as the United States and may not apply uniformly to Southeast Asia (Cobham & Janský, 2018). In the context of Indonesia, Malaysia, Singapore, and Thailand, the dominant mechanism of corporate tax avoidance is profit shifting through transfer pricing arrangements between related entities (Kim et al., 2011; Lohse & Riedel, 2013). These practices involve reallocating profits to lower-tax jurisdictions by manipulating intra-group transactions, such as the pricing of goods, services, or intangible assets (Choi et al., 2020). However, due to limitations in

the availability of firm-level international tax disclosures—such as country-by-country reporting (CbCR), this study adopts the effective tax rate (ETR) as a commonly used, albeit imperfect, proxy for overall tax avoidance behavior.

2.4. Hypothesis Development

The administration of corporate tax plays a significant role in shaping corporate tax avoidance behavior. Recent literature suggests that tax decisions are crucial managerial decisions, with managers using tax avoidance tactics to increase after-tax profits and fulfill shareholders' expectations (Duhoon & Singh, 2023). The relationship between the administration of corporate tax and tax avoidance is complex and multifaceted and is influenced by various factors, such as firms' characteristics, political connections, and corporate social responsibility activities (Duhoon & Singh, 2023; Krieg & Li, 2021). Interestingly, the literature reveals contradictions in the relationship between the administration of corporate tax and tax avoidance. While some studies conclude that socially responsible companies are more likely to engage in tax avoidance (Gulzar et al., 2018), others suggest a negative relationship between corporate social responsibility (CSR) and tax avoidance (Kovermann & Velte, 2021). Several studies suggest that the administration of corporate tax can significantly influence tax avoidance through various mechanisms. These include tax havens (Jiang et al., 2020), international debt shifting, treaty shopping, and corporate inversions (Beer et al., 2019). Furthermore, the impact of tax administration on avoidance behavior may vary across different contexts and jurisdictions, as shown by contrasting results in Indonesia and Australia (Rini et al., 2023). There is still a need to explore these variations and identify the specific administrative elements that most effectively deter or encourage tax avoidance behavior. Based on agency and legitimacy theories, firms that institutionalize tax oversight and transparency mechanisms are more likely to reduce opportunistic tax behavior and align managerial actions with stakeholder expectations. These mechanisms help institutionalize responsible tax practices within organizations. Therefore, the following hypothesis was formulated:

H1. *Firms with stronger corporate tax administration practices exhibit lower levels of tax avoidance.*

Corporate tax avoidance has been shown to significantly influence the administration of corporate tax through various mechanisms. Recent literature suggests that companies use tax avoidance strategies to reduce their tax burden, which, in turn, influences their overall tax administration decisions. Research has shown that companies with directors associated with tax havens exhibit greater tax avoidance behavior. For instance, U.S. companies with directors who have links to the Bahamas, Bermuda, or the Cayman Islands show a reduction in their effective tax rate of one to three percentage points and an increased use of subsidiaries in tax havens (Jiang et al., 2020). This suggests that social and professional connections play a crucial role in shaping the administration of corporate tax. Company characteristics and management decisions have a significant impact on tax avoidance behavior. Managers often adopt tax avoidance tactics to increase after-tax profits, fulfill shareholders' expectations, and sometimes for personal benefit. In addition, corporate characteristics, political connections, and corporate social responsibility activities influence tax decisions (Duhoon & Singh, 2023). These factors collectively contribute to the formulation of corporate tax administration. Tax avoidance's impact on corporate performance and value is also a critical factor in shaping the administration of corporate tax. Some studies indicate a mixed relationship between tax avoidance and corporate performance, suggesting that the benefits of tax avoidance may not always outweigh the potential risks and costs (Khuong et al., 2020). This finding underscores the importance of a balanced approach to tax administration that considers both its financial and rep-

utational impacts. Corporate tax avoidance significantly influences tax administration through various interrelated factors, including the relationship between directors, company characteristics, CSR considerations, and the impact on performance (Hasan et al., 2023). As organizations navigate these complex relationships, they must carefully develop tax administrations that balance financial objectives with broader stakeholder expectations and regulatory compliance (Ramesh & Athira, 2023). Based on signaling theory, transparent firms seek to legitimize their tax behavior through structured disclosure mechanisms, thereby shaping the development of tax administration practices in response to perceived scrutiny and reputational considerations. This approach influences the evolution of tax administration practices driven by companies' awareness of scrutiny and concerns about reputation. Therefore, the following hypothesis was formulated:

H2. *Firms that engage in lower levels of tax avoidance are more likely to adopt formal corporate tax administration practices.*

3. Method

This study focuses on the Southeast Asian region. Several firms in Southeast Asia engage in different avoidance strategies, which are often shaped by weak enforcement and profit-shifting opportunities. In emerging markets, particularly in Southeast Asia, multinational firms often exploit institutional gaps and regulatory inconsistencies to engage in tax avoidance through mechanisms such as transfer pricing and cross-border profit shifting. However, the ability to empirically capture these international avoidance strategies remains limited. This is primarily due to the absence of publicly available detailed data on consolidated group-level financials or country-by-country reporting within standard company annual reports. As a result, measuring profit shifting with precision using the available dataset is currently infeasible. Therefore, this study focuses on domestically observable tax avoidance behaviors through proxies, such as the effective tax rate (ETR), which are consistently reported and verifiable, while recognizing the broader international tax avoidance dynamics that remain important but outside the empirical scope of this research. The selected Southeast Asian countries were Indonesia, Malaysia, Singapore, and Thailand. These four countries have the largest Gross Domestic Product (GDP) compared to other Southeast Asian countries, so the potential tax that can be achieved from GDP ranges between 10 and 30%. This study considers 2022 and 2023. The year 2022 was chosen as the initial year of research because 2022 is the initial implementation of the Organization for Economic Co-operation and Development (OECD) policy on Global Minimum Taxation, which emphasizes tax transparency and the establishment of minimum tax rates to reduce the level of tax avoidance globally (Johannesen, 2022). The year 2024 could not be studied because at the time of the research, many companies had not yet reported their annual reports. The study population comprises all public companies in four Southeast Asian countries, totaling 3007 companies, but 277 companies have complete data: 21 companies from Indonesia, 139 companies from Malaysia, 42 companies from Singapore, and 75 companies from Thailand. Thus, 554 observations were studied. This sample refinement was based on methodological standards commonly applied in tax avoidance research. First, firms reporting net losses were excluded, as the effective tax rate (ETR) is not a meaningful measure for such companies because of the absence or negativity of taxable income (D. M. Christensen et al., 2021). Second, firms with ETR values greater than one were eliminated, given that it is not economically plausible for a company to pay income tax exceeding its reported earnings, which are often indicative of data irregularities, deferred tax anomalies, or non-recurring adjustments (Schwab et al., 2021). Additionally,

the availability of structured disclosures related to the CTAR is limited in the region, as many firms do not provide sufficient or standardized tax policy data.

The main variables in this study are (1) the administration of corporate tax and (2) corporate tax avoidance. In this study, the administration of corporate tax is measured based on tax disclosures in the company's annual report. There are eight indicators of tax disclosure in the company's annual report, taken from the Refinitiv Eikon database. The eight indicators are listed in Table 1. This indicator essentially explains the presence or absence of disclosure in an item related to the administration of corporate tax. This study uses a calculation approach based on a nominal measurement scale, namely, 1 (there is a significant administration of corporate tax) or 0 (there is no disclosure or the corporate tax administration disclosure is not significant). How this calculation was arrived at can be explained as follows:

First, we checked the existence of the eight indicators according to the Refinitiv data. If an indicator exists, it is given a score of 1, and if it does not exist, it is given a score of 0. The scores of all indicators were then added together and divided by eight, resulting in a raw score for the administration of corporate tax.

Second, the raw score for the administration of corporate tax (CTAR) was transformed into a binary format to indicate whether a firm engages in significant tax administration disclosure. This conversion was necessary because of the nature of the original data, which exhibited a highly left-skewed distribution: most firms disclosed very little or no structured tax administration information. Tax-related disclosures are typically approached with a high degree of caution and confidentiality, often leading to zero or minimal scores (Kays, 2021). Such a skewness can result in statistical outliers, thereby violating normality assumptions in the regression models. To address this issue, raw scores were standardized using a Z-distribution, as recommended in the outlier management literature (Venkatanusha et al., 2019; Chikodili et al., 2021). Based on this standardization, a Z-score of 3.0 corresponded to a raw tax administration disclosure score of 12.5%. This threshold was then adopted as the cut-off point: firms scoring above 12.5% were coded as 1 (significant tax administration) and those below as 0 (insignificant). In addition to reducing the impact of statistical anomalies, the 12.5% threshold aligns conceptually with international tax benchmarks such as the OECD's global minimum tax rate and the effective tax rate used in jurisdictions like Ireland (De Simone et al., 2023). Finally, converting the CTAR variable into a binary format also supports the estimation requirements of the probit model used to test the second hypothesis, in which CTAR functions as a dependent variable.

The tax avoidance variable is measured using the effective tax rate (ETR) relative to the statutory corporate tax rate. For example, a low ETR compared to the statutory corporate tax rate is interpreted as evidence of tax avoidance. The ETR variable is the main proxy used in tax avoidance research and automatically reflects the level of tax payments based on the profit earned by the company. The tax and profit components used in this study are further explained in Table 1. While the ETR is widely accepted in empirical tax avoidance research, it is derived from domestically reported financial data and, therefore, may not capture profits shifted offshore through mechanisms such as transfer pricing (Schwab et al., 2021). This limitation arises from the lack of a consolidated worldwide profit disclosure in most financial statements and annual reports, particularly in emerging market contexts. As such, this study does not aim to capture international forms of tax avoidance but rather focuses on domestically observable tax minimization strategies. It is important to note that a lower ETR in the absence of profit shifting may also result from government-sanctioned tax concessions such as accelerated depreciation, investment allowances, or tax holidays (D. M. Christensen et al., 2021). To minimize this potential bias, this study excludes companies known to receive special tax tariffs or enjoy specific fiscal

incentives and includes firms across all industries, thereby providing a more representative and balanced view of corporate tax behavior within the domestic tax system.

This study also used three control variables, (1) company size, (2) profitability, and (3) leverage, as summarized in Table 1. These three variables are commonly used in research on TA. Company size is related to tax avoidance because assets are sourced from company income, so companies with large total assets also tend to save tax burdens (Mocanu et al., 2021). Companies that have a high profitability also try to reduce the tax burden because the basis of tax imposition comes from profit (Henry & Sansing, 2018). Companies with high debt levels (leverage) have inconsistencies in the results of previous studies, but in general, companies with high debt levels have significant interest expenses, which are tax-deductible expenses, so they can significantly reduce income tax expenses (Sánchez-Ballesta & Yagüe, 2024). These three variables can also serve as control variables for the administration of corporate tax. The administration of corporate tax can be implemented from the perspective of company size if a company has sufficient resources to carry it out (Bachas et al., 2019). From the perspective of profitability, the administration of corporate tax can be implemented if the company is in a good condition, because in the context of this study, there are still many companies in Southeast Asia that have not prioritized the implementation of the administration of corporate tax as their main policy (Rüland, 2020). This means that companies that already have a good financial performance will only consider implementing tax administration (Pfaffermayr et al., 2013). This study primarily employs firm-level financial indicators as control variables, given their established relevance in tax avoidance research and consistent availability across the sample. Variables such as firm size, profitability, and leverage are widely used in empirical studies and reliably disclosed in corporate financial statements (Ali et al., 2020). While additional firm-level governance variables, such as CEO duality, board independence, and auditor quality, could potentially enrich the analysis, they were excluded due to limited and inconsistent disclosure across firms and jurisdictions in Southeast Asia (Sewpersadh, 2019). Including such variables would have significantly reduced the number of observations available for the analysis, thereby limiting the statistical power of the study and narrowing its empirical scope. Similarly, incorporating macroeconomic indicators, such as GDP or tax effort ratios, poses methodological challenges, including aggregation bias and multicollinearity, which can compromise the validity of firm-level inferences (Fuhrmann, 2019). Moreover, including such variables may reduce the generalizability of the findings across firms and countries with varying disclosure practices.

All variable data were averaged across the years 2022 and 2023, meaning that a single composite value was calculated for each variable based on the two-year average. Average data processing eliminates the effect of data outliers, especially data with large fluctuations, such as corporate tax avoidance or corporate tax policy (Borrouhou et al., 2023; Hossain et al., 2024). While panel or fixed-effects models are widely used to account for unobserved heterogeneity, in this case, panel regression is not feasible due to significant year-to-year inconsistencies, data gaps, and the presence of extreme outliers in individual-year financial disclosures. Many firms in the sample exhibited an incomplete or irregular reporting of key tax-related variables across years, which would have compromised the validity and reliability of the panel dataset. The years 2022 to 2023 are post-COVID-19 recovery years; therefore, there are several anomalies in the data that have the potential to cause a large level of outliers. Therefore, some studies recommend that research in the post-COVID-19 recovery years be averaged (Kuhfeld et al., 2022).

Table 1 explains the operationalization of the variables as follows:

Table 1. Variables' operationalization.

Variable	Explanation
Corporate Tax Administration (CTAR)	<p>Calculated based on the presence of 8 elements as presented according to the Refinitiv Eikon database as follows:</p> <ol style="list-style-type: none"> (1) Tax Data Verification (2) Tax Fairness Commitment (3) Tax Auditor Information (4) Tax Oversight by Board (5) Taxes Align to Revenues (6) Audit Oversight of Tax (7) Named Position for Tax Oversight (8) Policy Tax Transparency <p>The 8 items are counted individually with 0 (if disclosed) and 1 (if disclosed). The 8 items are then summed and divided by 8. The result is the corporate tax administration raw score. The corporate tax administration raw score is then converted into 1 (significant tax administration) or 0 (non-significant tax administration) based on following criteria: 1: if the raw score $\geq 12.5\%$ 0: if the raw score $< 12.5\%$</p>
Corporate Tax Avoidance (CTA)	<p>Calculated based on Effective Tax Rate (ETR) relative to the statutory corporate tax rate. The ETR is income tax expense divided by the profit before tax. The value of the income tax expense is taken from the "Total Income Tax Expense—Reported" in the Refinitiv Eikon database. The value of profit before tax is taken from the "Net Profit Before Tax—Reported" in the Refinitiv Eikon database.</p>
Company Size (COS)	<p>Company size is calculated based on the Natural Logarithm (Ln) of the total asset value. The company size value is taken from Total Asset—Reported from the Refinitiv Eikon database.</p>
Profitability (POF)	<p>Profitability is calculated from the Return on Asset (ROA) value, which is the value of net income divided by the value of total assets. Net income value is taken from Refinitiv Eikon, in the Net Income After Taxes—Reported classification, and Asset Value is taken from the Total Asset—Reported classification.</p>
Leverage (LVG)	<p>Leverage is calculated based on the Debt to Equity (DER) value. The DER value is obtained from dividing total liabilities divided by total company equity. The total liability value is taken based on the Total Debt—Reported value from the Refinitiv Eikon database. The total equity value is taken based on the Total Equity—Reported value from the Refinitiv Eikon database.</p>

Data analyses were conducted using the following quantitative approach:

For a descriptive analysis of the data, statistical measures, such as means, standard deviations, and maximum and minimum values, were computed. Additional descriptive examinations were conducted by comparing averages across three categories: (a) by year, to observe annual fluctuations in variable components; (b) by country, to assess potentially significant disparities in the administration of corporate tax between nations; and (c) by industry, to evaluate potentially significant variations in the same corporate tax administration aspects across different sectors. The industry categorization employed follows the Global Industry Classification Standard (GICS), a system that groups companies based on their primary business activities. The GICS comprises 11 sectors: (i) energy, (ii) materials, (iii) industrial, (iv) Consumer Discretionary, (v) Consumer Staples, (vi) Health Care, (vii) financials, (viii) Information Technology (IT), (ix) Communication Services, (x) utilities, and (xi) Real Estate.

To determine if the observed differences between years were statistically significant, this study utilized the ANOVA test to examine differences among countries and industries.

Two different testing models were used for the hypothesis testing. The first hypothesis was tested using multiple regression. To ensure that multiple regression analysis was suitable in this research, classical assumption tests were conducted in the form of normality, multicollinearity, and heteroscedasticity tests. An autocorrelation test was not required because the data were not time-series data. The second hypothesis testing was carried out using logistic regression, because the dependent variable is a company management administration variable that has a binary value. The assumption test in logistic regression is different from multiple regression, so the fit of the model might be seen based on the Hosmer–Lemeshow test. The following equation was used to test the research hypotheses:

Hypothesis Equation (1)

$$CTA = \alpha + \beta_1 CTAR + \beta_2 COS + \beta_3 POF + \beta_4 LVG + \varepsilon \quad (1)$$

Hypothesis Equation (2)

$$CTAR = \alpha + \beta_1 CTA + \beta_2 COS + \beta_3 POF + \beta_4 LVG + \varepsilon \quad (2)$$

where

α = Constant;

β = Regression coefficient;

CTA = Corporate tax avoidance;

CTAR = Corporate tax administration;

COS = Company Size;

POF = Profitability;

LVG = Leverage;

ε = Error.

To further assess the potential endogeneity and bidirectional relationship between corporate tax administration (CTAR) and corporate tax avoidance (CTA), this study employs the Control Function Approach (CFA) and Probit Instrumental Variable (probit IV) model as an extension of the primary regression models. This technique is particularly suitable when the endogenous variable CTAR is binary and CTA is continuous. The CFA allows for robust endogeneity correction without assuming strict linearity or relying solely on a standard instrumental variable (IV) regression. The possibility that CTA and CTAR may be simultaneously determined using standard OLS or logistic regression alone could lead to biased estimates. Therefore, the following steps were performed:

A. Stage 1: Instrumenting the Endogenous Variables

For the first hypothesis, a probit IV model was estimated using the CTAR as the dependent variable. In this model, country-level governance indicators—specifically, the average scores of Control of Corruption, Government Effectiveness, and Rule of Law (sourced from the World Bank’s Worldwide Governance Indicators)—were employed as instrumental variables. These instruments were selected based on their theoretical relevance in shaping tax administration structures while being plausibly exogenous to corporate tax avoidance (CTA). The residuals from the first-stage model (RES1) were saved and included in the second-stage regression as a correction term to account for potential endogeneity.

For Hypothesis 1

First-Stage Equation (3):

$$CTAR = \pi_0 + \pi_1 WGI + \pi_2 COS + \pi_3 POF + \pi_4 LVG + u \quad (3)$$

For the second hypothesis, a Control Function Approach (CFA) was employed, using CTA as the dependent variable. In the first stage, linear regression was conducted, with the potentially endogenous regressor as the dependent variable to obtain the residuals. These residuals (RES2) were saved and included in the second-stage model as a correction term to address potential endogeneity. This procedure allows for a consistent estimation of the effect of corporate tax avoidance on the likelihood of engaging in the administration of corporate tax.

For Hypothesis 2

First-Stage Equation (4):

$$CTA = \lambda_0 + \lambda_1 WGI + \lambda_3 COS + \lambda_4 POF + \lambda_5 LVG + v \quad (4)$$

where

CTAR = Corporate tax administration;

CTA = Corporate tax avoidance;

WGI = World Governance Indicator;

COS = Company size;

POF = Profitability;

LVG = Leverage;

u, v = First-stage error terms.

B. Stage 2: Corrected Model (Ordinary Least Squares with Residual)

In the second stage, both hypotheses are estimated by regressing the dependent variable on the potentially endogenous regressor and control variables, with the corresponding first-stage residuals included to account for endogeneity. For Hypothesis 1, CTA was regressed on CTAR, company size, profitability, leverage, and the residual term, RES1. For Hypothesis 2, CTAR was regressed on CTA, company size, profitability, leverage, and the residual term RES2. In both models, a statistically significant coefficient of the residual term (RES1 or RES2) confirms the presence of endogeneity and supports the validity of the control function approach.

Second Stage Equation (5)

$$CTA = \alpha_0 + \alpha_1 CTAR + \alpha_2 COS + \alpha_3 POF + \alpha_4 LVG + \alpha_5 RES1 + \varepsilon \quad (5)$$

Second Stage Equation (6)

$$CTAR = \beta_0 + \beta_1 CTA + \beta_2 COS + \beta_3 POF + \beta_4 LVG + \beta_5 RES2 + \varepsilon \quad (6)$$

where:

α = Constant;

β = Regression coefficient;

CTA = Corporate tax avoidance;

CTAR = Corporate tax administration;

COS = Company size;

POF = Profitability;

LVG = Leverage;

RES1 = Residuals from 1st-stage equation of first hypothesis (1);

RES2 = Residuals from 1st-stage equation of second hypothesis (2);

ε = Error.

4. Results and Discussion

4.1. Results

4.1.1. General Descriptives

Table 2 presents descriptive statistics for all variables under consideration. The CTAR variable exhibits a two-year average of 0.054, with specific values of 0.04 and 0.06 for the years 2022 and 2023, respectively. Notably, only 44 companies (representing 15.8%) had significant CTAR values (defined as being equal to or exceeding 12.5%). This pattern is consistent across the four countries studied, as most companies do not exhibit significant CTAR values. The standard deviation, ranging from 0.133 to 0.147, indicates substantial dispersion in the CTAR values among the 277 sampled companies. The maximum and minimum values were 1 and 0, respectively, indicating extreme variation. Overall, these findings suggest that tax governance among companies in the four countries studied remains suboptimal. A more detailed discussion of the CTAR is provided in the subsequent subsection.

Table 2. Descriptive statistics.

Variable		Mean			Std. Dev			Min			Max	
Year	2022	2023	Average	2022	2023	Average	2022	2023	Average	2022	2023	Average
CTAR	0.044	0.063	0.054	0.133	0.147	0.140	0.000	0.000	0.000	1.000	1.000	1.000
CTA	0.206	0.219	0.212	0.139	0.147	0.121	0.000	0.000	0.000	0.860	0.890	0.875
COS	21.227	21.260	21.244	1.812	1.818	1.814	16.950	17.080	17.010	27.040	27.050	27.050
POF	0.082	0.079	0.081	0.065	0.065	0.065	0.010	0.010	0.010	0.380	0.400	0.390
LVG	0.705	0.706	0.706	0.706	0.720	0.706	0.000	0.000	0.000	4.440	3.850	4.140
Total Number of Companies that have 2 years average CTAR score												
Country			≥12.5%			<12.5%			Overall			
Indonesia			7			14			21			
Malaysia			16			123			139			
Singapore			9			33			42			
Thailand			12			63			75			
Overall			44			233			277			

The average CTA value was 0.212, with an average standard deviation of 0.121 (12.1%). This finding indicates that the average tax burden for companies falls within the 10% to 30% range, which aligns with the tax rate range of the four countries studied. Singapore has the lowest corporate tax rate (17%), whereas Malaysia, Indonesia, and Thailand have tax rates ranging from 20% to 24%. The minimum tax rate agreement influences the determination of a reasonable tax rate, impacting Singapore, which is recognized as a tax haven in the Southeast Asian region.

Analysis of the three control variables reveals an improvement in financial performance from 2022 to 2023. The average COS value was 21.244, with an average standard deviation of 1.814. The COS values range from 17.01 to 27.05. Generally, the descriptive statistical value for COS in 2023 has increased compared to that in 2022, indicating asset growth during that year. The average POF value was 0.08,1 with an average standard deviation of 0.065, and the POF values range from 0.01 to 0.39. Descriptive statistics for POF in 2023 also show an increase compared to those in 2022, supporting the assertion that the company's financial performance is improving. The average LVG value was 0.706, with an average standard deviation of 0.706, and the LVG values range from 0.00 to 4.14. Many companies continued to have high levels of debt and a low equity following the contraction caused by the COVID-19 pandemic, which may explain the extreme values observed in the

LVG variable. Descriptive statistics for LVG in 2023 generally decreased compared with 2022, further supporting the assertion of improved financial performance.

4.1.2. Corporate Tax Administration Descriptives

Table 3 compares the disclosure of corporate tax administration (CTAR) elements across Indonesia, Malaysia, Singapore, and Thailand, and the overall averages for 2022 and 2023. Based on the overall trends, none of the eight elements that served as indicators of the CTAR variable exhibited values exceeding 20%. However, most elements saw a slight increase in disclosures from 2022 to 2023, with Policy Tax Transparency having the highest increase, from 10.47% to 17.33%. The lowest disclosure is the Tax Auditor Information, at 0.36% in 2022 and 0.72% in 2023. In 2023, the highest levels of corporate tax administration score were observed in the elements of Policy Tax Transparency (17.33% overall, with Indonesia leading at 33.33%), Taxes Align to Revenues (10.47% overall, with Indonesia leading at 23.81%), and the Tax Fairness Commitment (8.66% overall, again led by Indonesia at 19.05%). These results show that Indonesia places a relatively high emphasis on tax administration disclosure and ethical tax commitments compared to other countries in the region, although the overall transparency levels in key areas such as verification and auditor accountability remain low. However, it should be noted that Indonesia has a smaller number of companies than other countries, so a large percentage in Indonesia does not necessarily indicate that implementation in Indonesia is much greater than in the other three countries.

The Tax Data Verification element registers a low percentage overall score of 1.08% both in years 2022 and 2023, with Indonesia specifically recording a value of 0%. This may be attributed to Indonesia's adherence to the principle of tax data confidentiality, whereby the tax data presented are generally limited to those requested in accordance with general financial statements (Basri et al., 2021). There is no indication of whether the data are verified in accordance with tax provisions. The conditions in the other three countries were similarly limited, with only one company represented in each country. The Tax Fairness Commitment element also exhibits a low percentage score, with overall scores of 6.86% (2022) and 8.66% (2023). An increase in this element's score was observed across all study countries except Indonesia. Notably, Malaysia shows a significant increase (3.60% to 6.47%) involving four companies, from five to nine companies.

The Tax Auditor Information element is the least disclosed element, reported only 0.72% (2023), exclusively reported by Singapore. Tax auditors are not mandatory in the study countries, as financial statement auditors typically do not conduct specialized tax audits (De Simone et al., 2014). However, various studies suggest that tax governance can be enhanced through a tiered audit of tax aspects in corporate financial statements. Tax auditors' examination may also mitigate the risk of scrutiny by taxation authorities (Chyz et al., 2021). Tax Oversight by The Board has a disclosure value of 6.86% (2023). Indonesia consistently led, with 19.05% of companies disclosing this element in both 2022 and 2023, indicating a stronger emphasis on board-level involvement in tax governance. Other countries showed gradual improvements, most notably Malaysia, which increased from three disclosures in 2022 to seven in 2023, reflecting growing awareness and responsibility at the board level regarding corporate tax matters. Generally, in the four countries studied, there is no regulatory requirement for board members to specifically oversee tax obligations and present tax reports (Beasley et al., 2020). Nonetheless, some companies have audit or risk committees that address tax risk and compliance (Klassen et al., 2015). There was a general improvement in the element Taxes Align to Revenues in all countries in 2023, with the disclosure rate increasing from 7.94% in 2022 to 10.47%. This positive trend was particularly evident in Thailand and Malaysia, where the number of companies that disclosed this information increased significantly. The results suggest that companies are

making progress in showing that their tax payments match their revenues, reflecting a growing awareness of the importance of tax transparency and fairness. All the study countries generally adhere to OECD principles, ensuring fair tax payments commensurate with the income earned. These OECD principles have been integrated into each country's tax regulations (Alinaghi & Reed, 2020).

Table 3. Corporate tax administration score.

Elements of CTAR	Year	Indonesia	Malaysia	Singapore	Thailand	Overall
% of Companies that Disclosed						
Tax Data Verification	2023	0	1	1	1	3
		0.00%	0.72%	2.38%	1.33%	1.08%
	2022	0	1	1	1	3
		0.00%	0.72%	2.38%	1.33%	1.08%
Tax Fairness Commitment	2023	4	9	6	5	24
		19.05%	6.47%	14.29%	6.67%	8.66%
	2022	5	5	5	4	19
		23.81%	3.60%	11.90%	5.33%	6.86%
Tax Auditor Information	2023	0	0	2	0	2
		0.00%	0.00%	4.76%	0.00%	0.72%
	2022	0	0	1	0	1
		0.00%	0.00%	2.38%	0.00%	0.36%
Tax Oversight by Board	2023	4	7	6	2	19
		19.05%	5.04%	14.29%	2.67%	6.86%
	2022	4	3	5	3	15
		19.05%	2.16%	11.90%	4.00%	5.42%
Taxes Align to Revenues	2023	5	11	6	7	29
		23.81%	7.91%	14.29%	9.33%	10.47%
	2022	4	6	7	5	22
		19.05%	4.32%	16.67%	6.67%	7.94%
Audit Oversight of Tax	2023	1	2	3	1	7
		4.76%	1.44%	7.14%	1.33%	2.53%
	2022	1	1	2	1	5
		4.76%	0.72%	4.76%	1.33%	1.81%
Named Position for Tax Oversight	2023	1	4	2	0	7
		4.76%	2.88%	4.76%	0.00%	2.53%
	2022	1	1	2	0	4
		4.76%	0.72%	4.76%	0.00%	1.44%
Policy Tax Transparency	2023	7	18	9	14	48
		33.33%	12.95%	21.43%	18.67%	17.33%
	2022	6	9	7	7	29
		28.57%	6.47%	16.67%	9.33%	10.47%

The Audit Oversight of Tax element shows a relatively low disclosure across all countries, with only 2.53% of companies reporting this element in 2023, although this represents a slight increase on the previous year. Singapore leads the way in this area, with 7.14% of companies disclosing audit oversight of tax matters, indicating a marginally stronger role of internal audits in tax administration. Not all companies conduct a specific oversight of tax audits, which is consistent with the low score on the Tax Auditor Information element. The Named Position of Tax Oversight element showed a slight improvement overall, increasing from 1.44% in 2022 to 2.53% in 2023. Despite this modest increase, this practice remains uncommon across the region, with Thailand reporting no companies with designated positions for tax oversight. This suggests that in most cases, responsibility for tax oversight is still handled informally or embedded in broader duties, rather than being assigned to a clearly defined position within the organizational structure. Lastly, Policy Tax Transparency is the highest-value element among the eight existing CTAR indicators. However, tax policies related to transparency are often corporate formalities disclosed in corporate reporting, indicating that companies are still in the commitment stage rather than the implementation stage (Olsen & Stekelberg, 2015).

The analysis shows both progress and persistent challenges in corporate tax administration disclosure in Southeast Asia. Most countries are disclosing more information, especially Policy Tax Transparency, which is a sign of the increasing importance of openness. However, there are still critical gaps in Tax Data Verification and Tax Auditor Information, indicating potential risks to accountability in tax reporting. In terms of country differences, Singapore leads the Audit Oversight of Tax, Indonesia excels in Policy Tax Transparency, while Thailand and Malaysia are making progress but still lag behind in management oversight and formalized tax functions. These findings suggest that harmonized standards are needed to increase transparency, particularly in under-reported areas, while leveraging the best regional practices to encourage wider compliance.

4.1.3. ANOVA

The results of the ANOVA are presented in Table 4. This test was conducted to compare the means of the variables across countries and industry sectors. On a per-country basis, all the variables exhibited significant differences among the countries studied. Indonesia had the highest CTAR and CTA component values. The analysis of the administration of corporate tax reveals that Indonesia has the highest average disclosure score (0.128), indicating a stronger commitment to tax governance than other countries. By contrast, Malaysia (0.035) and Thailand (0.043) show significantly lower averages, suggesting weaker disclosure practices in these countries. The differences in CTAR scores across countries are statistically significant ($F = 8.833, p = 0.000$), highlighting meaningful variations in the articulation and disclosure of corporate tax policies in the region. The analysis of corporate tax avoidance on a per country basis reveals notable differences in tax behavior across Southeast Asia. Indonesia recorded the highest average CTA score of 0.274, suggesting a greater tendency among its companies to engage in tax minimization strategies. Malaysia (0.242) and Thailand (0.181) also show relatively high levels of tax avoidance, although lower than that in Indonesia. These findings suggest that, while some countries are making efforts toward improved tax governance, tax avoidance remains prevalent in others, particularly in jurisdictions where oversight and enforcement may be less stringent. The ANOVA test results ($F = 17.362, p = 0.000$) confirm that these differences are statistically significant, underscoring the meaningful variation in corporate tax avoidance behavior across the region. However, as previously noted, while Indonesian tax rates are relatively high among the four countries examined, the elevated CTAR percentage can be attributed to the limited number of companies.

Table 4. ANOVA Test.

Variable/Explanation	2-Year Average Score				
	CTAR	CTA	COS	POV	LVG
Per Country					
Indonesia	0.128	0.274	22.516	0.112	0.568
Malaysia	0.035	0.242	20.566	0.086	0.600
Singapore	0.097	0.141	22.355	0.053	0.647
Thailand	0.043	0.181	21.521	0.078	0.972
Overall	0.054	0.212	21.244	0.081	0.706
ANOVA test score	8.833	17.362	37.836	9.510	10.241
Sig	0.000	0.000	0.000	0.000	0.000
Per Industry					
Financials	0.051	0.222	23.118	0.047	0.874
Industrials	0.066	0.261	20.514	0.078	0.597
Real Estate	0.095	0.162	21.965	0.041	0.763
Communication Services	0.000	0.182	22.088	0.065	1.077
Consumer Staples	0.053	0.248	20.721	0.113	0.615
Information Technology	0.056	0.154	19.866	0.102	0.156
Consumer Discretionary	0.019	0.200	20.502	0.102	0.836
Utilities	0.038	0.136	22.159	0.056	1.284
Materials	0.028	0.233	20.717	0.085	0.447
Energy	0.085	0.264	22.045	0.103	0.772
Health Care	0.016	0.234	19.903	0.127	0.528
Overall	0.054	0.212	21.244	0.081	0.706
ANOVA test score	2.129	5.146	21.748	12.204	7.109
Sig	0.021	0.000	0.000	0.000	0.000

Within the individual sectors, the analysis of CTAR disclosure shows that the Real Estate (0.095) and energy (0.085) sectors have the highest average CTAR values, which indicates that companies in these sectors are more likely to formalize and disclose their tax policies. This is followed by the industrial (0.066) and Information Technology (0.056) sectors, indicating a moderate awareness of tax administration. Notably, the Communication Services sector reports a CTAR score of 0.000, indicating no formal tax administration disclosure, which could indicate a lack of transparency or the lower importance of tax administration. The ANOVA test ($F = 2.129$, $p = 0.021$) indicated statistically significant differences between the sectors, even though the differences were less pronounced for CTAR than for CTA. The analysis of CTA across sectors shows that the industrial (0.261) and energy (0.264) sectors have the highest average CTA values, which indicates more aggressive tax planning behavior. The Consumer Staples (0.248) and Materials (0.233) sectors also show a higher level of tax avoidance behavior for various reasons, such as complex supply chains or more extensive international activities. In contrast, sectors such as Real Estate (0.162) and Information Technology (0.154) show a more moderate level of tax avoidance, while utilities (0.136) show the most conservative approach. The ANOVA test ($F = 5.146$, $p = 0.000$) confirms that these differences are statistically significant, which

emphasizes that companies' tax avoidance is closely linked to the structural and strategic characteristics of the individual sectors.

There are significant differences between countries and sectors in terms of CTAR and CTA, which illustrate different approaches to tax administration. Indonesia proves to be the most proactive country in terms of corporate tax administration disclosure (the highest CTAR), but it also records the highest level of tax avoidance (the highest CTA), an indication of a potential disconnect between administrative commitment and actual behavior. In contrast, Singapore has a moderate CTAR level and a lower CTA level, indicating a more balanced relationship between behavior and tax governance. From a sector perspective, energy, industrial, and Consumer Staples stand out with a higher CTA level, which could attract the attention of regulators and raise environmental, social, and governance (ESG) concerns related to financial risks and ethical behavior. Generally, there are specific tax regulations within sectors that would result in abnormal effective tax rates. Overall, the distribution of the ETR across industrial sectors remains at the 20% level, which aligns with the average normal tax rate in the countries studied.

4.1.4. Multiple Regression

Prior to conducting the multiple regression analyses, it was essential to perform classical assumption tests. Given that the data under examination comprise combined data (annual averages), the classical assumption tests focus on three key aspects, normality, multicollinearity, and heteroscedasticity, as shown in Table 5. The normality test using the Kolmogorov–Smirnov method yielded a significance value of 0.007, that is, less than 0.05, which indicates that the residuals are not normally distributed. However, non-normality in the regression test can be disregarded because the sample size exceeds 200 observations, as achieving normality in large samples is challenging because of the asymptotic nature of the test statistics. Multicollinearity tests yielded Variance Inflation Factor (VIF) values between 1.124 and 1.481, which are well below the critical threshold of 10. This indicates that multicollinearity is not a problem, and that the independent variables are not strongly correlated with each other; this assumption is fulfilled. The heteroscedasticity test resulted in a significance value of 0.01, which was less than 0.05, indicating the presence of heteroscedasticity. Heteroscedasticity is addressed through the application of the Huber–White heteroscedasticity error correction, which statistically adjusts regression models exhibiting heteroscedasticity. Because two of the three classical assumption tests are satisfied, the regression analysis can be continued appropriately.

Table 5. Classical assumption test.

Classical Assumption Test	Score	Criteria for Good Fit	Test Result
Normality test (Kolmogorov–Smirnov test)	0.007	sig > 0.05	Not passed
Multicollinearity test (Variance Inflation Factor)	1.124–1.481	VIF < 10	Passed
Heteroscedasticity test (Huber–White test)	0.01	sig > 0.05	Not passed

The multiple regression analysis in Table 6 provides information on the factors that influence CTA. The model yielded an adjusted R-squared of 0.021, which means that only 2.1% of the variation in CTA was explained by the independent variable, CTAR, and the control variables, COS, POV, and LVG. Despite the low explanatory power, the overall model was statistically significant at the 5% level (F-statistic = 2.455, $p = 0.046$), indicating that the independent variables had an overall significant relationship with CTA. The CTAR variable exhibits a positive coefficient, indicating that an increase in a company's tax administration value corresponds to a higher effective tax rate, implying a reduced

likelihood of tax avoidance by the company. CTAR significantly influenced CTA, thereby supporting Hypothesis 1. Among the three control variables, only COS was statistically significant, whereas POF and LVG were not statistically significant. The negative coefficient of COS suggests that companies with substantial corporate assets tend to have a lower effective tax rate, indicating tax avoidance. This observation is plausible, because the company's assets reflect its substantial economic capacity, making tax savings more critical for such entities (Hossain et al., 2024).

Table 6. Multiple regression analysis results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.402	0.102	3.929	0.000
CTAR	0.058	0.022	2.582	0.010
COS	−0.009	0.005	−2.002	0.046
POV	−0.158	0.127	−1.240	0.216
LVG	0.011	0.010	1.135	0.257
Adjusted R-squared				0.020652
F-statistic				2.455013
Prob (F-statistic)				0.046134

4.1.5. Logistic Regression

Logistic regression analysis was performed to evaluate Hypothesis 2. This method does not require the application of classical assumption tests, allowing for direct examination of the constructed logistic regression model. Table 7 presents the results of this analysis.

Table 7. Logistic regression analysis results.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	−15.938	2.593	−6.147	0.000
CTA	3.478	1.442	2.412	0.016
COS	0.589	0.111	5.296	0.000
POV	7.618	2.657	2.867	0.004
LVG	0.112	0.228	0.489	0.625
McFadden R-squared				0.152089
H-L statistic				9.7884
Prob. Chi-Sq(8)				0.2802
LR statistic				36.88351
Prob (LR statistic)				0.000

However, the logistic regression model was evaluated using the McFadden and Hosmer–Lemeshow tests. The McFadden R-squared value is 0.152, which is modest but acceptable for logistic regression models and suggests an appropriate fit for behavioral or administration-related outcomes. The result of the Hosmer–Lemeshow test (H-L statistic = 9.7884, $p = 0.2802$) was not significant and indicated a good fit of the model. The predicted values agreed well with the observed data, suggesting that the model was adequately fitted for analysis.

The logistic regression model was statistically significant overall, with a Likelihood Ratio (LR) statistic of 36.88 ($p = 0.000$), indicating that the predictors jointly contribute

meaningfully to explaining the outcome. The results revealed that the effect of CTA on the CTAR was statistically significant. A positive coefficient indicates that a lower level of tax avoidance (characterized by a higher CTA value) leads to a more stringent administration of corporate tax. Among the three control variables, only COS and POF are significant, demonstrating the positive influence of assets and profitability on the administration of corporate tax. Conversely, LVG did not have a significant effect on CTAR. It is evident that the administration of corporate tax represents an investment that requires integration into a company's information systems, governance, and operational procedures, which requires substantial resources and favorable company conditions for effective implementation (Xu et al., 2023).

4.1.6. Robustness Test: Simultaneous Equation Model

Table 8 presents the results of the simultaneous equation tests. For Hypothesis 1, the regression results show that the RES1 variable is statistically significant at the 5% level (t-statistic = -3.977 , $p = 0.000$). The coefficient of CTAR was also significant (coefficient = 0.693 , t-statistic = 4.302 , $p = 0.000$). The direction of this coefficient was consistent with the results reported in Table 6, confirming that CTAR is endogenous to CTA. For Hypothesis 2, the initial regression results indicated a “complete separation detected at the estimated parameter” warning, suggesting that the results may not be valid. Therefore, a robustness test was conducted using a Linear Probability Model (LPM) as an alternative. Although not ideal, OLS with CTAR as the dependent variable can serve as a fallback when nonlinear models fail because of separation issues (Bun & Harrison, 2018). The regression results show that the RES2 variable is statistically significant at the 5% level (t-statistic = -7.110 , $p = 0.000$). The coefficient of CTA was also significant (coefficient = 4.886 , t-statistic = 7.333 , $p = 0.000$). The direction of this coefficient aligns with the findings in Table 7, confirming that CTA is endogenous to the CTAR. Based on these tests, it can be concluded that a simultaneous relationship exists between CTAR and CTA.

Table 8. Simultaneous equation model results (stage 2 only).

Variable	Coefficient	Std. Error	t-Statistic	Prob.
For the 1st hypothesis (dependent variable = CTAR)				
C	1.387	0.268	5.171	0.000
CTAR	0.693	0.161	4.302	0.000
COS	-0.057	0.013	-4.406	0.000
POV	-0.751	0.195	-3.851	0.000
LVG	0.009	0.010	0.906	0.365
RES1	-0.638	0.160	-3.977	0.000
For the 2nd hypothesis (dependent variable = CTAR)				
CTA	4.886	0.666	7.333	0.000
COS	-0.038	0.006	-5.915	0.000
POV	-0.466	0.313	-1.484	0.139
LVG	-0.007	0.031	-0.228	0.820
RES2	-4.886	0.687	-7.110	0.000

4.2. Discussion

In general, the results show that there is a simultaneous relationship between the administration of corporate tax and corporate tax avoidance. Before discussing the results

of the hypothesis testing for each model, there are several interesting points in this research. First, this study proves that the disclosure of corporate tax administration in Indonesia, Malaysia, Singapore, and Thailand is still very low; the level of disclosure is between 0 and 20%. Disclosure is mostly performed only in tax administration commitments and statements and has not yet entered the core aspects of tax supervision by the company or information related to special corporate tax audits. Corporate governance and ownership structure play significant roles in determining disclosure levels. Firms strategically manage their disclosure environments to offset their potential reputational costs. When mandatory disclosures are incomplete, companies may voluntarily issue additional information to maintain control over their disclosure narratives (Kays, 2021). This selective disclosure approach can result in lower overall transparency, particularly regarding tax policies. The ascension of corporate general counsel (GC) to top management is associated with increased tax aggressiveness, including greater book–tax differences and a higher likelihood of engaging in tax shelter activities (Bagnoli & Watts, 2007). This contradicts the expectation that having a GC in the top management would lead to more conservative tax practices and increased disclosure. Previous research shows that the low level of corporate tax administration disclosure in some companies can be attributed to factors such as concentrated ownership, the strategic management of disclosure environments, and the ineffectiveness of certain governance mechanisms in promoting transparency (Hassan et al., 2008; Kolsi, 2017; Mgammal et al., 2018).

Second, this study proves that the good administration of corporate tax can reduce tax avoidance in companies. The good administration of corporate tax, particularly when aligned with corporate social responsibility (CSR) principles, can help mitigate aggressive tax avoidance. Rudyanto (2024) demonstrates that disclosing tax payments in Global Reporting Initiative (GRI)-based sustainability reports reduces aggressive tax avoidance. This suggests that transparency and accountability in tax reporting as part of a broader CSR strategy can discourage companies from engaging in excessive tax avoidance practices. The good administration of corporate tax can contribute to reducing tax avoidance, and its effectiveness may depend on various factors, including the existing level of tax avoidance, the specific policies implemented, and the broader corporate governance framework. Incorporating tax planning into corporate social responsibility frameworks—termed “good tax governance”—can foster a moral mindset and enhance accountability and transparency, potentially leading to more responsible tax practices (Gribnau & Jallai, 2017). Third, this study proves that companies that engage in tax avoidance tend to have a low level of corporate tax administration disclosure. Corporate tax avoidance is often associated with reduced transparency and disclosures. Companies involved in aggressive tax planning may be reluctant to provide detailed information on their tax strategies to avoid scrutiny (Oats & Tuck, 2019). The lack of transparency in tax affairs can be seen as a way for firms to conceal their tax avoidance activities from stakeholders and regulators. Research has shown that tax avoidance behavior can increase agency costs and reduce firms’ value, particularly in contexts with weaker governance structures (Chen et al., 2014). To mitigate these negative effects, companies engaging in tax avoidance may choose to limit their tax administration disclosures in order to avoid drawing attention to their practices. This indicates that firms engaging in tax avoidance may prioritize other forms of disclosure over specific tax administration disclosures to maintain their legitimacy. The introduction of country-by-country reporting (CbCr) requirements has been shown to increase effective tax rates among affected firms (Joshi, 2020). This finding suggests that increased disclosure requirements can deter tax avoidance, implying that companies engaging in such practices may prefer to maintain lower levels of tax administration disclosure. Companies engaging in tax avoidance tend to have lower levels of corporate tax administration disclosure, as

they seek to minimize scrutiny, maintain legitimacy, and avoid the potential negative consequences associated with their tax planning strategies (Payne & Raiborn, 2015; Dyreng et al., 2016; Overesch & Wolff, 2021).

Fourth, the control variable in the first model results shows that companies' size and profitability affect the creation of the good administration of corporate tax, but leverage has no effect on the creation of the good administration of corporate tax. This suggests that larger firms may have more resources and opportunities to implement sophisticated tax strategies, thus influencing their tax administration decisions (Shubita, 2024). Profitability also has a significant effect on tax-related decisions. Profitable companies may have greater incentives and means to develop tax policies that minimize their tax burden (Rego, 2010). Fifth, the control variables in the second model also show that companies with large assets tend to practice tax avoidance, while profitability and leverage have no effect on the level of corporate tax avoidance. Larger firms have access to better tax expertise, more complex organizational structures, and a greater ability to shift profits across jurisdictions, enabling them to reduce their effective tax rates (Hossain et al., 2024). As Alarussi and Gao (2021) suggest, there might be an inverted U-shaped relationship between leverage and profitability, which depends on the balance between the benefits and cost of debt. This complexity could explain why some studies found significant relationships, while others did not.

Fifth, the interaction between the administration of corporate tax (CTAR) and corporate tax avoidance (CTA), measured using the effective tax rate (ETR), presents notable variation across the four Southeast Asian countries included in this study: Indonesia, Malaysia, Singapore, and Thailand. In this research context, a higher ETR reflects a lower degree of tax avoidance, indicating a greater degree of tax compliance. Among the countries analyzed, Indonesia demonstrated the highest average values for both CTAR (0.128) and CTA (0.274). This finding suggests a strong alignment between enhanced tax administrative practices and reduced tax avoidance. This result may reflect Indonesia's recent reforms to strengthen its tax authority, expand digital reporting systems, and increase its audit coverage (Hutagaol, 2025). This consistency supports the hypothesis that improvements in tax administration are associated with increased tax compliance. By contrast, Singapore showed a divergent pattern. Although it recorded a moderately high CTAR score (0.097), it also showed the lowest CTA value (0.141), implying higher levels of tax avoidance. However, this observation should not be interpreted as an indication of administrative weaknesses. Rather, it likely reflects the unique features of Singapore's tax regime, which is characterized by internationally competitive tax incentives, robust tax planning frameworks, and the widespread use of legally sanctioned mechanisms such as tax holidays and preferential rates for intellectual property income (Diller et al., 2025). These policy instruments contribute to lower ETRs without necessarily indicating noncompliance or aggressive tax behavior. Malaysia and Thailand occupy intermediate positions. Malaysia has a relatively low CTAR (0.035) with a moderate CTA (0.242), suggesting that factors beyond formal tax administration, such as industry-specific tax incentives, voluntary compliance behavior, or firm-level governance mechanisms, may influence corporate tax practices (Cheong et al., 2020). Similarly, Thailand has a low CTAR score (0.043) and moderately low CTA (0.181), potentially reflecting limitations in tax enforcement capacity and compliance oversight (Nkundabanyanga et al., 2017). The mixed pattern observed in these two countries points to the possibility of moderating effects from institutional, political, or sectoral variables that shape the tax compliance environment. Collectively, these findings reinforce the notion that the relationship between tax administration and tax avoidance is context-specific and is shaped by institutional, regulatory, and market dynamics. Strengthening the administration of corporate tax is a vital mechanism for promoting compliance in jurisdictions such as

Indonesia and Thailand, where the tax enforcement capacity may evolve. In contrast, in high-governance countries, such as Singapore, lower ETRs may be attributable to policy-driven tax planning strategies rather than weak administration, highlighting the distinction between administrative enforcement and intentional tax competitiveness.

Sixth, although the adjusted R^2 and McFadden R^2 values in this study are relatively low (0.02 and 0.15, respectively), this does not diminish the validity of the analysis. In behavioral and governance-related research, particularly in the area of tax avoidance, it is common to encounter a low explanatory power owing to the complexity and unobservability of managerial decision-making, firm-specific strategies, and regulatory environments (Khurana et al., 2018). The primary objective of this study is not to predict outcomes with high precision but to examine statistically significant and theoretically grounded relationships between the administration of corporate tax and tax avoidance. Low R^2 values are acceptable in this context, as long as the estimated coefficients are consistent, robust, and aligned with the theory. Furthermore, the inclusion of endogeneity-robust estimators, such as the control function approach and instrumental variables, enhances the credibility of the findings, despite the modest variance explained by the model.

5. Limitations

Despite the contributions of this study to the understanding of the administration of corporate tax and tax avoidance in Southeast Asia, several limitations must be acknowledged. These limitations relate primarily to the nature of the data, measurement proxies, and methodological scope, and they offer avenues for future research to build upon and strengthen the findings presented here

First, this study focuses exclusively on tax avoidance, which involves the legal use of tax planning strategies to minimize tax liabilities. It is important to distinguish this from tax evasion, which refers to illegal actions such as concealing income or falsifying records. Since the data used in this research are based on the publicly disclosed financial statements of listed firms, the analysis does not and cannot capture tax evasion behaviors. Future research examining tax evasion would require access to enforcement, audit, or confidential administrative data typically held by tax authorities.

Second, the use of the effective tax rate (ETR) as a proxy for tax avoidance is based on financial data reported at the jurisdictional level. As such, this metric does not account for profits shifted abroad through transfer pricing mechanisms, which are widely recognized as the primary tax avoidance strategy among multinational firms in Southeast Asia. Furthermore, the ETR reflects tax paid on income already shifted out of the reporting jurisdiction, rather than pre-shift income. Due to the lack of access to consolidated global financial reports or country-by-country reporting (CbCR) disclosures, this study relies on national-level data. Future research may improve its accuracy by using group-level financial data, OECD CbCR filings (where available), or alternative proxies such as book-tax differences, cash ETR, or measures that adjust for intercompany transactions and tax haven exposure.

Third, some observed reductions in ETR may stem not from aggressive avoidance but from government-sanctioned tax incentives, such as R&D deductions, tax holidays, or accelerated depreciation policies. These policy-induced reductions are intended outcomes of economic strategies rather than indicators of avoidance. Without granular disclosure on tax expenditures, it is difficult to disentangle strategic avoidance from policy incentives. Future research should consider controlling for the presence of such incentives or analyzing footnotes and segment disclosures that explain the composition of the tax burden.

Fourth, the measurement of the administration of corporate tax (CTAR) is derived from disclosure-oriented indicators available in the Refinitiv Eikon database. These indicators are based on firms' voluntary disclosures and may reflect reputational or investor-relations

considerations rather than actual tax governance quality. Consequently, the CTAR score may overrepresent firms that are communicative but not necessarily more compliant. Future studies should incorporate content analysis, survey data, or interviews with tax executives to better capture the internal practices and policy enforcement mechanisms within firms.

Finally, this study uses a sample of 277 firms selected based on the completeness of data across all variables. This sample size, although suitable for econometric testing, may introduce selection bias. Firms with a limited transparency, smaller market capitalizations, or less public reporting may be excluded, potentially skewing the results. Expanding the dataset to include more firms across varying jurisdictions, industries, and reporting environments—possibly using the collection of primary data or alternative databases—can help improve the representativeness and generalizability in future research.

6. Conclusions

This study explores the association between the administration of corporate tax (CTAR) and corporate tax avoidance (CTA) among publicly listed firms in Southeast Asia, with evidence suggesting a statistically significant and mutually associated relationship between the two. Although simultaneous equation modeling and endogeneity tests strengthen the robustness of the findings, the results should be interpreted as associational rather than strictly causal, suggesting that firms with more structured tax governance frameworks tend to exhibit lower levels of tax avoidance, as measured by effective tax rates. Conversely, firms exhibiting a high tax avoidance are less likely to disclose effective tax administrative practices. These dynamics differ across countries, with Indonesia and Malaysia showing a relatively stronger tax governance and higher effective tax rates than Thailand and Singapore, respectively.

Considering these findings, we recommend that regulators and policymakers consider strengthening board-level oversight mechanisms, mandating more detailed tax transparency disclosures, and aligning national corporate governance codes with OECD tax governance best practices. For example, in countries with lower CTAR scores, such as Thailand, policy efforts may focus on improving enforcement and mandatory reporting frameworks. In contrast, in jurisdictions such as Indonesia, where disclosure levels are relatively high, efforts could be directed toward enhancing the quality and auditability of tax risk disclosures. In Malaysia, where CTAR is relatively low despite moderately high ETRs, tax policy should emphasize mandatory governance-based tax disclosures and the board-level oversight of tax risks, including clear guidelines for tax committee roles. Thailand, with the lowest CTAR and modest ETR, should prioritize building a basic tax governance infrastructure, such as encouraging voluntary disclosure practices, reinforcing regulatory enforcement capacity, and aligning reporting standards with international benchmarks like GRI 207. These steps can lay the groundwork for a gradual shift from opaque to transparent tax behavior. In Singapore, where the ETR is the lowest, and CTAR is modest despite a high level of institutional governance, the concern is less about weak regulation and more about strategic tax planning under favorable legal regimes. Policy recommendations include tightening disclosure requirements for multinational intragroup transactions, reinforcing anti-base erosion rules, and enhancing transparency for companies with complex offshore structures.

Another key limitation of this study is its reliance on the effective tax rate (ETR) as the sole proxy for tax avoidance, which is based on financial data reported at the domestic jurisdiction level. As such, this measure does not capture income that may have been shifted to low-tax jurisdictions through transfer pricing or other international tax planning strategies. This limitation arises primarily because of the unavailability of consolidated

financial data that include worldwide profits or detailed disclosures of multinational affiliate structures. To address this constraint, future research should incorporate alternative or supplementary proxies that better reflect global tax avoidance behavior. These may include the use of country-by-country reporting (CbCR), indicators of affiliate presence in tax havens based on OECD classifications, and access to MNE group-level financial statements. Such enhancements would allow for a more comprehensive assessment of both the domestic and international dimensions of corporate tax avoidance.

This study also has limitations related to the measurement of the administration of corporate tax, which is proxied using eight disclosure-based indicators sourced from the Refinitiv Eikon database. While these indicators, such as tax transparency, board oversight, and fairness commitments, provide insights into a firm's tax governance and administrative practices, they may not fully capture the broader strategic dimensions of the administration of corporate tax. These proxies rely on the presence or absence of public disclosures, which are influenced by firms' voluntary reporting behavior, industry norms, and jurisdictional regulations. Consequently, the indicators may reflect a firm's commitment to transparency rather than actual tax management practices. Moreover, the binary scoring approach adopted in this study, which is effective in reducing the influence of outliers, may oversimplify the variations in disclosure quality and depth. Future research could enhance this measurement by incorporating a qualitative content analysis of tax disclosures or by integrating additional data on firm-level tax risk management, board tax expertise, or tax governance frameworks to provide a more nuanced understanding of corporate tax administration practices.

One specific limitation of this study lies in the binary transformation of the corporate tax administration (CTAR) variable using a 12.5% threshold. While this threshold is conceptually grounded in international tax policy benchmarks and facilitates the differentiation of firms with active tax governance practices, it inevitably reduces the granularity of original continuous data. This transformation may obscure meaningful differences in the intensity of tax administration among firms near the threshold. Although the choice of the 12.5% cutoff is theoretically justified based on global benchmarks (e.g., OECD minimum effective tax rate discussions and low-tax jurisdiction thresholds), the absence of a sensitivity analysis may limit its robustness. Future research is encouraged to either retain CTAR as a continuous variable if data quality permits or apply alternative thresholds to evaluate the consistency of results and improve the classification of firms' tax governance characteristics.

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