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Firm Risk and Tax Avoidance in Vietnam: Do Good Board Characteristics Interfere Effectively?

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Abstract: This paper investigates the role of board characteristics in the relationship between tax avoidance behavior and corporate risk tolerance to elucidate the importance of corporate governance mechanisms. The applied methodology is System-GMM for 334 listed corporations in Vietnam from 2008 to 2020 to avoid endogenous problems in our models. The main findings are that higher (lower) corporate risk-taking is related to higher (lower) corporate tax avoidance if the size of the board of directors and the supervisory board are larger (lower) than six and three members, respectively. Furthermore, if the board independence ratio is lower than 48.63%, an increase in corporate risk-taking leads to increased tax avoidance. Our results support the argument that the influence of corporate risk-taking on tax avoidance behavior is governed by governance structure. Therefore, the practical implications will be towards building the optimal governance mechanism for enterprises in Vietnam.

Keywords: firm risk; tax avoidance; corporate governance; board characteristics; Vietnam

1. Introduction

Tax avoidance is an important issue as it relates to corporate and tax agency strategies (Mocanu et al. 2021). Tax policies are often designed to achieve optimal revenue and, at the same time, have the least negative impact on the economy's production (Ismagilova and Orlova 2007). However, from the taxpayer's perspective, the tax policy's effectiveness does not seem to be the main concern, as for this subject, the smallest tax payment is beneficial. This is why investigating the factors that influence tax avoidance has been an important concern in the field of corporate finance and accounting over the past two decades (Halioui et al. 2016). Tax avoidance practices include illegal and legitimate tax avoidance schemes through investment activities and business structures to reduce the tax burden in the business (Dyreng et al. 2010; Hanlon and Heitzman 2010). By taking advantage of tax laws and regulations gaps, businesses can develop strategies involving contractual or transactional structures that reduce the amount of income tax payable (Desai and Dharmapala 2006; Lisowsky 2010). Indeed, it can be difficult for tax authorities to determine the exact amount of a company's taxes due to the complexity and ambiguity of the tax laws enacted, especially when the company has actively evaded taxes (Hanlon et al. 2017).

Although the goal of tax avoidance practices may be to increase shareholder returns, it can still affect the company's overall risk under the traditional view of trade-offs between risk and return (Badertscher et al. 2013, 2019; Hasan et al. 2014). Dhaliwal et al. (2017) and Dyreng et al. (2018) argued that tax avoidance behaviors reduced the certainty of future cash flows because tax avoidance strategies might be subject to revision by payment

tax authorities' investigation, and it also depended on the change in tax law. Furthermore, Balakrishnan et al. (2018) confirmed that tax avoidance behaviors could increase information asymmetry related to the disclosure of corporate financial information and, at the same time, attract the attention of tax authorities and public investors. According to Nguyen et al. (2021), tax avoidance behaviors contribute to the information asymmetry that could increase corporate risk.

Indeed, most recent studies are consistent with the view that tax avoidance can entail corporate risk (Rego and Wilson 2012; Blouin 2014; Guenther et al. 2016). It can be an indicator of a range of risky investment activities, such as increasing investment in low-tax countries to offset correspondingly high investment risk. In addition, tax avoidance increases the uncertainty of future cash flows and the challenge of tax authorities. It also increases the complexity of financial reporting and disclosure and reduces the company's transparency from the investors' perspective of public investment (Guenther et al. 2016; Yuwono and Mustikasari 2021).

Contrary to the view that corporate risk is related to tax avoidance behavior, Guenther et al. (2016) confirmed avoidance is not related to the risks of U.S. firms through the effective tax rate. The authors argued for several reasons for this result; for example, firms may purchase urbanism tax-free bonds legally as a form of tax-advantaged investment strategy to minimize tax liability without increasing risk (Dyreng et al. 2018) or measures of tax avoidance are uncertain and do not adequately reflect tax avoidance behavior (Lisowsky et al. 2013; Bauer and Klassen 2014). Meanwhile, Nguyen and Phan (2017) confirmed that tax avoidance was related to the ownership structure and characteristics of enterprises in Vietnam. These potential factors can be primarily from the risk perception of the enterprise, the optimal governance structure or from asymmetric information (Halov and Heider 2011; McNulty et al. 2012; Elbadry et al. 2015). However, this inconsistency may be related to risky behaviors from factors themselves that are outside the range of previously observable firm characteristics (Guenther et al. 2016). As the financial market is turbulent, the investor's behavioral model is not stable. The investor's conduct is influenced by a combination of rational (objective) and irrational (subjective) elements (Orlova 2017). This study's main objective is to lift the veil on the rational objective by using the relationship between corporate risk and tax avoidance.

Previous studies have emphasized that board characteristics perform a key role in driving corporate governance behaviors (Elbadry et al. 2015; Elad et al. 2018). Researchers, such as Lanis and Richardson (2014) and Watson (2015), concluded that corporate tax avoidance was intrinsically related to corporate liability. Therefore, Khan et al. (2022) argued that studying corporate governance was the key to explaining corporate tax avoidance behavior. This is because corporate governance is an internal and external accountability structure that ensures businesses are accountable to stakeholders while operating ethically (Solomon 2020; Varghese and Sasidharan 2020). However, there are some situations in which the directors do not act in the shareholders' best interests, which seriously affects the corporate performance and its value despite the rationality in selecting the members of the board of directors (Perry and Shivdasani 2005). Therefore, most corporate laws and regulations prioritize having a good corporate governance mechanism in which the board of directors is defined according to specific characteristics to maintain and control corporate operations effectively. Indeed, board characteristics are considered to be an important key to determining the success of objectives, such as corporate value and performance (Pham and Islam 2022; Ciftci et al. 2019; Griffin et al. 2014). The same is probably true for tax avoidance, which has been identified as a strategy that benefits managers rather than corporate social and governance responsibilities (Khan et al. 2022).

Among emerging Asian countries, the corporate governance structure in Vietnam is considered undeveloped, with the lowest corporate governance scores among Asian countries from 2012 to 2019 (ADB 2021). Furthermore, the Vietnamese market is not classified as fully efficient, leading to weak oversight and enforcement of transparency (Gupta et al. 2014). Recently, the Enterprise Law (2014 and 2020), the Securities Law (2019)

and the Information Disclosure Regulation (2020) have made important recommendations to improve regulations on corporate governance. All these changes promote the development of modern governance mechanisms in enterprises in Vietnam. However, tax avoidance has still taken place in Vietnam[1]. Unfortunately, such studies are not really many in emerging countries, where the level of corporate governance is assessed as low. Previous tax studies in Vietnam often focused on tax planning, tax revenue, tax system and tax policy at the management level of the state (Kien et al. 2015; Tran and Huynh 2020; Van and Tran 2021), ignoring the behavior of tax avoidance at the corporate level. Therefore, in addition to issues related to law counting and law enforcement, corporate governance features should also be considered to encourage changes in governance mechanisms toward transparency in business activities.

This article, therefore, contributes to the literature related to tax avoidance in three main aspects: (1) the article examines tax avoidance behaviors related to corporate risk tolerance; (2) the article examines tax avoidance behaviors under the lens of corporate governance characteristics that are represented by board characteristics and (3) the research sample is companies listed on stock exchanges in Vietnam. These three aspects add to the previous literature in a different way to investigate tax avoidance as a corporate strategy to deal with corporate risks to achieve better competition and how tax avoidance is reflected as the result of specific board characteristics. Finally, this approach is applied to an emerging country with a low governance background to provide more apparent evidence. The research structure consists of Part 1—Introduction, Part 2—Theory, Part 3—Data and Experimental Methods, Part 4—Results and Discussion and Part 5—Conclusion.

2. Literature Review and Hypothesis Development

Corporate executives could make decisions or choices to maximize corporations' value and long-term investors (Firth et al. 2006; Harford et al. 2018). In one way or another, their choices focus on maximizing the firm value by continuously seeking out high-profit initiatives, assisting enterprises in growing, becoming more efficient and boosting their worth in financial markets. However, managers are frequently confronted with the conflict between increasing shareholder gains and committing misbehavior in company performance. These issues can have an impact on the aspects that determine corporate risk and managerial decisions.

According to the researchers, tax avoidance is a part of an enterprise's strategy, connected to contract design or transaction, to take advantage of flaws in tax legislation and related legal restrictions to reduce mandatory income taxes (Alstadsæter et al. 2022; Mocanu et al. 2021; Nguyen and Phan 2017). The effective tax rate has been said to be one of the critical aspects in determining corporate ethics and benefits for shareholders (Hasan et al. 2021; Minh Ha et al. 2021). The corporate culture theory contends that there is a negative relationship between tax avoidance and risk and that all business actions should be founded on a shared conviction in "*optimistic behavior*" (Hermalin 2013). Furthermore, according to this notion, a firm will not engage in activities that have a negative impact on its reputation and community. However, risk management theory states that firms prioritize shareholder interests over the interests of all stakeholders. Thus, Desai and Dharmapala (2009) confirmed that manipulating a firm's effective tax rate might be costly to shareholders since it is more related managerial opportunism and rent extraction of administrators instead of the generation of shareholder wealth. Those attempts to reduce the effective tax rate would benefit them by increasing after-tax profits and, as a result, managers received bonuses from their profits and shareholders. Meanwhile, tax avoidance exposes firms to risky strategies and actions (Hanlon and Heitzman 2010; Pohan in Sholikhah and Nurdin 2022; Dyreng et al. 2018; Hutchens et al. 2019) that investors shareholders will encounter when the corporate's financial situation is uncertain (Mahdi et al. 2019; Choi and Park 2022).

Indeed, some recent studies suggest that firms exhibit a trade-off between risk and tax avoidance, whereby firms increase their after-tax profits by accepting a higher level of risk (Guenther et al. 2016; Yuwono and Mustikasari 2021). For example, Rego and

Wilson (2012) confirmed an inverse relationship between the CEO's risk-taking incentives and the firm's effective tax cash level by applying two-stage least squares regression for data extracted from The Center for Research in Security Prices (CRSP) and Compustat's Fundamentals Annual database. In addition, Cao et al. (2021), adopting a difference-in-differences approach, investigated that volatility in higher future returns was associated with lower corporate cash efficiency tax rates, thus supporting the risk-return trade-off in the expanded sample of firms in U.S. and China. Furthermore, previous studies also found evidence consistent with the idea that lower tax rates lead to riskier cash flows, as reflected in higher borrowing costs (Hasan et al. 2014; Shevlin et al. 2019). Using Latent Class Mixture Model—a model allows to define latent class mixture models to observe relations between the variables, Hutchens et al. (2019) explained that tax avoidance benefits the company's cash, and this action can even cause uncertainty about the company's future financial position due to the risk of the company's actions. This result was also confirmed by Cao et al. (2021). According to Drake et al. (2017) and Abernathy et al. (2019), the company's tax avoidance was a planned action, and the company knew the level of risk arising from tax avoidance. This suggests that low-risk firms were willing to risk tax authority challenges in order to achieve higher returns. Therefore, our hypothesis for the relationship between corporate risk and tax avoidance is as follows:

Hypothesis H1: *Firm risk has a negative impact on tax avoidance behavior.*

Numerous previous research papers examine the effects of corporate governance on effective tax rates (Chen et al. 2010, 2017; Minnick and Noga 2010; Armstrong et al. 2012; Wahab and Holland 2012; Siew Yee et al. 2018; Badertscher et al. 2019; Sholikhah and Nurdin 2022; Khuong et al. 2019), where corporate governance is commonly represented by the board of directors (BOD), independent members of the board of directors, board of supervisors (BOS) and duality of Chief Executive Officer (CEO). Tax avoidance behavior can be viewed as evidence of the agency problem, assuming that there is an information asymmetry between managers as agents and principal owners (Jensen and Meckling 1976). Managers are morally and decisively responsible for optimizing the interests of the owners (principal) and meeting shareholders' interests in order to maximize profits and psychological satisfaction; meanwhile, shareholders will focus on increasing the value of their shares. Thus, the company has two distinct interests that each seeks to achieve or maintain a desired level of the commonwealth. The existence of a conflict of interest between two parties is the cause of different behaviors and is influenced by the corporate governance structure itself (Sholikhah and Nurdin 2022; Khan et al. 2022).

Indeed, Kang and Ko (2014) in Choi and Park (2022) provided evidence of a significant negative relationship between tax avoidance and firm value by investigating the role of corporate governance. Agent conflicts can affect tax treatment either positively or negatively when there are differences in the interests of the agent and when the fiduciary engages in aggressive tax avoidance (Zemzem and Ftouhi 2013). This condition occurs because managers want to get compensation through higher profits, while other shareholders want to reduce tax costs through lower profits. Armstrong et al. (2015) provided evidence that managers were more inclined to avoid taxes than necessary when the manager's level of self-interest is high. Similarly, Soon Hong and Kang Heum (2009) analyzed the relationship between tax avoidance and managers' pursuit of personal profit for firms listed in the Korea Stock Market from 2002 to 2006. They suggested that tax avoidance increased overinvestment and reduced profitability in the future and the distribution of wealth. Goh et al. (2016) gave evidence that there was a significant negative relationship between the cost of capital and the degree of tax avoidance, using the regression with year and industry dummies, and this phenomenon was prominent with better corporate governance. This was interpreted that a rise in cash flow uncertainty was caused by tax avoidance; accordingly, investors require a lower expected rate of return. In addition, Armstrong et al. (2015) also provided evidence that financial professionals and independent outside directors minimize

extreme levels of tax avoidance in firms for panel data of firms listed on Compustat during 2007–2011. Meanwhile, Tandean and Winnie (2016) argued that it was the supervisory board's responsibility in corporate governance to ensure the correct companies' behaviors were run according to the laws and regulations; hence collusion among members of management, reducing tax avoidance behavior. In addition, Minnick and Noga (2010) argued that good corporate governance should include a qualified board of directors, whereby firms with more boards of directors had more opportunities to reduce tax avoidance risks, and Sholikhah and Nurdin (2022) suggested that the presence of independent directors on the board of directors could improve monitoring of the performance of the board of directors. As a result, a good governance structure will increase oversight to prevent tax avoidance by companies by management.

Based on these previous studies, it can be predicted that the phenomenon outlined in Hypothesis 1 will change in the case of a corporation with reasonably excellent corporate governance. If the company has external independent financial experts or directors, they will help to reduce the company's risks. In other words, a company with sound corporate governance will urge management to maintain its effective corporate tax rate volatility as low as possible. As a result, there is an incentive to manage tax avoidance through a more long-term tax plan. On this basis, Hypothesis 2 is established as follows:

Hypothesis H2: *If corporate governance is better, the negative relationship between tax avoidance behavior and firm risk will weaken.*

3. Data and Experimental Methods

3.1. Data and Samples

To investigate the corporate's tax avoidance, firm risks and corporate governance, this study uses an annual sample including firms listed in Vietnam exchanges (Ho Chi Minh Stock Exchange and Hanoi Stock Exchange) from 2008 to 2020. Our sample is selected for several criteria. First, this study excludes corporates operating in the financial and banking sectors. Second, this study excludes firms without complete and continuous data from 2008 to 2020. Thus, this study has the final research sample with 334 listed corporates and 4057 observations to make up panel data in which financial data are extracted through consolidated financial statements. Table 1 shows that the number of selected firms accounts for a large proportion of listed firms. In other words, the representativeness and the reliability of the research are ensured.

Table 1. Description of sample.

Industry	Number of Firms	Percentage (%)
Services	13	3.89%
Agriculture Production	4	1.20%
Construction and Real Estate	87	26.05%
Information and Technology	21	6.29%
Manufacturing	113	33.83%
Mining, Quarrying and Oil and Gas Extraction	16	4.79%
Retail Trade	12	3.59%
Transportation and Warehousing	26	7.78%
Utilities	19	5.69%
Wholesale Trade	23	6.89%
Total	334	100.00%

3.2. Empirical Models and Methods

This study derives from a model of Nguyen and Phan (2017) to investigate determinants of tax avoidance behavior by employing firm characteristics. Meanwhile, Xiao and Xi

(2022) argued that it was necessary to consider the lagged of tax avoidance behavior when analyzing factor affecting it.

$$ETR_{it} = \alpha + \theta * ETR_{it-1} + \beta * \sum Firm\ characteristics + \varepsilon_{it} \tag{1}$$

where, *ETR* is effective tax rate which is calculated by Ratio of total tax expenses to income before tax. ETR_{it-1} is the lagged of dependence variable. $\sum Firm\ characteristics$ is a vector including leverage, tangible assets, firm size and growth opportunities.

Moreover, to explore the effect of firm risk on corporate tax avoidance, this study adds indicators that proxy for firm risk in our model as suggestion of Rego and Wilson (2012), Hutchens et al. (2019) and Cao et al. (2021).

$$ETR_{it} = \alpha + \theta * ETR_{it-1} + \gamma * Frisk + \beta * \sum Firm\ characteristics + \varepsilon_{it} \tag{2}$$

where, *Frisk* proxies for firm risk and is calculated by (1) Ratio of return on assets (ROA) to Standard deviation of ROA and (2) Ratio of return on equity (ROE) to Standard deviation of ROE.

In addition, this study analyzes corporate governance's role in the relationship between firm risk and corporate tax avoidance by using corporate governance variables and the interaction variables between corporate governance and firm risk.

$$ETR_{it} = \alpha + \theta * ETR_{it-1} + \gamma * Frisk + \varphi * Frisk * \sum Corporate\ governance + \omega \\ * \sum Corporate\ governance + \beta * \sum Firm\ characteristics + \varepsilon_{it} \tag{3}$$

where, $\sum Corporate\ governance$ is a vector including CEO dual, Board size, Board independence and Board supervisor. φ reflects the interaction effect between firm risk and corporate governance on corporate tax avoidance.

To evaluate the impact of firm risk on corporate tax avoidance with a mediating effect of corporate governance, this study takes the derivative of tax avoidance behavior for firm risk (FRISK)

$$\frac{dTAX}{dFRISK} = \gamma + \varphi * \sum Corporate\ governance \tag{4}$$

From Equation (4), this study finds that the effect of firm risk on corporate tax avoidance depends on the corporate governance mechanisms.

The dependent variable in our study is corporate tax avoidance, measured by dividing total tax expenses by earnings before tax, similar to Nguyen and Phan (2017). Additionally, this study uses the measurement of Faccio et al. (2016) and Vo (2018) to proxy for firm risk, which is based on the modified Z-score measures. This indicator is calculated by dividing the profitability by the volatility of profitability. Return on assets (ROA) and return on equity (ROE) may be used as indicators for the profitability of corporate (Kijkasiwat and Phuensane 2020; Kijkasiwat et al. 2022). Thus, the volatility of profitability is measured by the standard deviation of ROA and ROE (Vo 2018). This ratio reflects that corporates get more volatile returns if they invest in riskier projects and engage in more risky operations (Vo 2018; Nguyen et al. 2020). Moreover, it is essential to note that this ratio is an inverse measure of firm risk. Notably, a higher value of this ratio shows a low risk behavior (Vo 2018; Nguyen et al. 2020).

Regarding corporate governance, four measures are used to explain the influence of corporate governance on the relationship between firm risk and corporate tax avoidance. CEO dual (DUAL) is measured as a dummy variable, with one value if the Chairman and CEO are at the same person and zero otherwise. The natural logarithm of the number of total members on the board measures the Size of the Board (BSIZE). Board Independence (BIND) is also measured by the number of independent directors divided by the total number of board members. Finally, the board of supervisors (BOS) is proxied by taking the natural logarithm of the total number of board of supervisors members (Kijkasiwat et al. 2022; Hang 2022).

For other independent variables, in keeping with the work of Nguyen and Phan (2017), this study uses firm size, leverage, tangible assets and growth opportunities. Larger firms may have more complex transactions, which leads to a more significant gap that taxpayers may use to conduct tax avoidance activities. Highly leveraged corporates may face high-interest expenses from debt financing, decreasing income before tax and leading to lower tax expenses. In other words, these firms may benefit from the tax shield of debt and promote tax avoidance behaviors. Growth opportunities may increase profits generated by the company in the future, which leads to higher tax payments (Wahyuni et al. 2019). In this scenario, the firm's manager may perform more tax avoidance behavior to increase shareholder wealth. All information of variables is presented in Table 2.

Table 2. Variables' abbreviation, description, definition and expected sign.

Variables	Description	Definition	Expected Sign
ETR	Tax avoidance	Ratio of total tax expenses to income before tax	
FRISK1	Firm risk	Ratio of return on assets (ROA) to Standard deviation of ROA	
FRISK2	Firm risk	Ratio of return on equity (ROE) to Standard deviation of ROE	
LEV	Leverage	Ratio of total debt to total assets	+
PPE	Tangible assets	Ratio of tangible assets to total assets	+
SIZE	Firm size	Natural logarithm of total assets	+
GRTH	Growth Opportunities	Ratio of Market value of assets to Book value of assets	+
DUAL	CEO dual	Dummy variable takes value of one if the Chairman and CEO is at the same person and of zero otherwise	+
BSIZE	Board size	Natural logarithm of Total number of board members	+
BIND	Board independence	Ratio of Number of independent directors to total number of board members	-
BOS	Board supervisor	Natural logarithm of Total number of board of supervisor members	+

source: authors.

Due to the lagged dependent variable, our model may face the issue of endogeneity. Interestingly, our sample has a short time dimension (13 years), but a large cross-section (334 firms). Thereby, similarly to Xiao and Xi (2022), this study uses the generalized method of moments (GMM) system estimation to regress the effect of corporate governance on the relationship between firm risk and tax avoidance for several reasons. First, the result of GMM system estimation may be more valid than the classical panel one when a sample is "small T, large N" panels (Blundell and Bond 1998; Roodman 2009). Second, GMM system estimation may solve the issue of endogeneity. Third, because the GMM first-different estimation may neglect the potential information generated, GMM system estimation seems more efficient than GMM first-different estimation. Additionally, Arellano–Bond estimator related to the system GMM has one- and two-step estimation. Roodman (2009) argues that a two-step estimator is asymptotically more efficient than a one-step one by using a weighting matrix, which is the inverse of an estimate of the covariance of the moments. Therefore, this study uses the two-step GMM system estimation to explore the role of

corporate governance on the relationship between firm risk and tax avoidance behavior in the time period from 2008 to 2020.

4. Results and Discussion

4.1. Descriptive Statistics and Correlation Matrix

Table 3 displays the descriptive statistics of the research variables, which include the mean, minimum value, standard deviation and maximum value. Notably, the mean value of ETR is 0.2046, showing that corporates in our sample pay about 20.46% corporate income tax on their pre-tax income. Its average value is higher than composite effective average tax rate in comparison to Thailand (19.6), Singapore (16.1) and lower Indonesia (20.8), Australia (28.5), Japan (28.4) and United States (22.3)[2]. This shows that the tax rate that corporation's contribution in Vietnam was quite low compared to the pretax income, which could be doubted by the ability of tax avoidance. The minimum and maximum values of ETR are −23.8247 and 13.5222, respectively. The statistic description of firm risk includes FRISK1 (mean 2.0417 with SD 1.9943) and FRISK2 (mean 2.1785 with SD 2.0916). Regarding corporate governance variables, the DUAL has a mean of 0.2783, showing that there are about 1,261 observations that the CEO holds the Chair position of the corporate board. The BISZE is 1.8468, reflecting that the BOD average has about five members. The BIND has a mean of 62.2840, showing the rate of independent members in BOD. The BOS has a mean value of 1.3519, implying that the board of supervision averagely has about two members.

Table 3. Descriptive statistics of the research variables.

Variable	Mean	Standard Deviation	Min	Max
ETR	0.2046	0.5657	−23.8248	13.5322
FRISK1	2.0417	1.9943	−3.1123	16.3586
FRISK2	2.1785	2.0916	−3.3304	13.3883
LEV	0.2219	0.1885	0.0000	0.7981
PPE	0.2519	0.2124	0.0000	0.9779
SIZE	27.1407	1.5092	23.2204	33.6772
GRTH	1.0807	0.5164	0.1922	9.0440
DUAL	0.2783	0.4482	0.0000	1.0000
BSIZE	1.8468	0.1566	1.0986	2.4849
BIND	63.2840	18.1070	0.0000	100.0000
BOS	1.3519	0.2168	0.0000	1.7918

source: authors' calculations.

Our paper applies the Fisher-type unit root test based on Augmented Dickey–Fuller test to avoid spurious regressions. The null hypothesis of the unit root test is that all panels contain unit roots (not stationary). Table 4 displays the results of the unit root test of all variables. Based on Table 4, this study finds that all variables are stationary at the level because all *p*-value of tests are less than 10%, which indicates that the test's null hypothesis is rejected.

Table 5 shows the correlation matrix among variables. Four measures for corporate governance, including DUAL, BSIZE, BIND and BOS, have positive relationships with tax avoidance, meaning that when the Chairman and CEO are the same person, it may increase tax avoidance with a correlation value of 0.0931 in comparison to 0.8. Similarly, if the size of the Board, independent Board and size of the Board of supervisor increase, it may increase the tax avoidance behavior of the company with a correlation value of 0.007, 0.0051 and 0.0317, respectively. These correlation coefficients are less than 0.8, which implies that the relationships between these variables are weak.

Table 4. Results of Unit root test.

Variable	Inverse Normal z	Conclusion
ETR	−24.7666	Stationary (null hypothesis is rejected)
FRISK1	−16.1430	Stationary (null hypothesis is rejected)
FRISK2	−17.4984	Stationary (null hypothesis is rejected)
LEV	−10.2322	Stationary (null hypothesis is rejected)
PPE	−7.1799	Stationary (null hypothesis is rejected)
SIZE	−4.1540	Stationary (null hypothesis is rejected)
GRTH	−19.8501	Stationary (null hypothesis is rejected)
DUAL	−4.5929	Stationary (null hypothesis is rejected)
BSIZE	−17.8233	Stationary (null hypothesis is rejected)
BIND	−8.7384	Stationary (null hypothesis is rejected)
BOS	−12.7696	Stationary (null hypothesis is rejected)

source: authors' calculations.

Table 5. Correlation matrix of Pearson.

	ETR	RISK1	RISK2	LEV	PPE	SIZE	GRTH	DUAL	BSIZE	BIND	BOS
ETR	1										
RISK1	−0.0211	1									
RISK2	−0.0207	0.9018 ***	1								
LEV	0.0109	−0.3296 ***	−0.2274 ***	1							
PPE	0.0022	−0.0634 ***	−0.0063	0.2875 ***	1						
SIZE	0.0301 *	−0.1509 ***	−0.121 ***	0.3955 ***	0.0693 ***	1					
GRTH	−0.0166	0.3591 ***	0.362 ***	−0.1525 ***	0.0162	0.1091 ***	1				
DUAL	−0.0391 **	−0.0076	−0.0229	−0.0106	−0.0399 **	−0.0645 ***	−0.0448 ***	1			
BSIZE	−0.007	0.0908 ***	0.0976 ***	0.0537 ***	0.1167 ***	0.2819 ***	0.147 ***	0.0342 **	1		
BIND	−0.0051	−0.0112	−0.0056	−0.0931 ***	0.0057	0.0501 ***	0.1092 ***	−0.3274 ***	0.0668 ***	1	
BOS	−0.0317	0.0546 ***	0.057 ***	−0.0249	0.0665 ***	−0.0761 ***	−0.0272*	0.0208	0.0022	−0.091 ***	1

***, **, * show the level of significance at 1%, 5%, and 10%, respectively. Source: authors' calculations.

4.1.1. The Effect of Firm Risk on Tax Avoidance Behaviors

As mentioned in Section 3, this study uses a two-step GMM system estimation to regress the effect of corporate governance on the association between firm risk and corporate tax avoidance behavior. This study adds two tests, including second-order AR(2) correlations and the Hansen test, to demonstrate the valid result of this method. The AR(2) test assesses the autocorrelation of residual, whereas the Hansen test focuses on the validity of instrumental variables used to solve the issue of endogeneity. Empirical results using GMM to regress the impact of corporate governance mechanisms on the association between firm risk and tax avoidance are presented in Tables 6–10. Generally, the *p*-values of the AR(2) test in four tables are greater than 10 percent, so it is impossible to reject the null hypothesis of the AR(2) test, implying that there is no second-order autocorrelation test. Similarly, the Sargan tests show that the instrumental variables are exogenous. Thus, this study suggests that these results are consistent.

In this section, regarding Hypothesis 1, this study assesses the effect of firm risk on tax avoidance behavior and presents these results in Table 6. The coefficients of proxies for firm risk are negative and significant statistics at a 10% level, showing that higher risk is related to lower tax avoidance behavior[3]. This finding is consistent with our expectations and some prior studies, such as Rego and Wilson (2012), Hutchens et al. (2019) and Cao et al. (2021). In trade-off theory and the above studies, corporations accept a trade-off between risks and returns; a corporate tax avoidance strategy can benefit shareholders through stock price volatility, although it is strongly associated with future corporate risk. Moreover, firms with higher risks may undertake projects with potential risks, but these projects also bring higher profits for firms. Hence, highly profitable firms have increased corporate tax expenses, decreasing tax avoidance behaviors. Meanwhile, low-risk firms are willing to

risk tax authority challenges in order to achieve higher returns by engaging in more tax avoidance behavior.

Table 6. The relationship between firm risk and corporate tax avoidance.

	DUAL	DUAL	BIND	BIND	BSIZE	BISZE	BOS	BOS
ETR	0.0138 ***	0.0147 ***	0.0183 ***	0.0185 ***	0.0172 ***	0.0171 ***	0.0172 ***	0.0167 ***
	(42.80)	(61.97)	(44.78)	(44.84)	(35.07)	(34.46)	(96.24)	(125.76)
RISK1	−0.0070 ***		−0.0224 ***		−0.0207 ***		−0.0135 ***	
	(−5.15)		(−9.10)		(−7.99)		(−13.79)	
RISK2		−0.0068 ***		−0.0211 ***		−0.0186 ***		−0.0109 ***
		(−6.58)		(−8.57)		(−7.36)		(−14.52)
LEV	0.1114 ***	0.1239 ***	−0.0101	0.0054	−0.0406	−0.0141	0.1159 ***	0.1395 ***
	(6.11)	(8.75)	(−0.29)	(0.16)	(−1.09)	(−0.39)	(7.27)	(16.76)
PPE	−0.0144	−0.0433 ***	−0.0701 ***	−0.0686 ***	−0.0754 ***	−0.0808 ***	−0.0299 ***	−0.0115 **
	(−1.02)	(−4.08)	(−2.98)	(−2.89)	(−3.31)	(−3.65)	(−3.55)	(−2.06)
SIZE	0.0207 ***	0.0171 ***	0.0339 ***	0.0340 ***	0.0485 ***	0.0480 ***	0.0223 ***	0.0199 ***
	(9.00)	(10.67)	(8.93)	(9.07)	(12.58)	(12.47)	(15.96)	(21.42)
GRTH	0.0032	−0.0055	0.0018	0.0032	0.0019	0.0046	−0.0027	0.0003
	(0.68)	(−1.40)	(0.29)	(0.51)	(0.31)	(0.73)	(−1.50)	(0.18)
C.G.	−0.1119 ***	−0.1273 ***	0.0011 ***	0.0013 ***	−0.2052 ***	−0.1966 ***	−0.1181 ***	−0.1665 ***
	(−15.73)	(−24.45)	(3.51)	(4.27)	(−4.49)	(−4.41)	(−9.28)	(−18.66)
Constant	−0.3454 ***	−0.2274 ***	−0.7315 ***	−0.7550 ***	−0.6748 ***	−0.6852 ***	−0.2312 ***	−0.1152 ***
	(−5.42)	(−5.35)	(−6.87)	(−7.24)	(−5.65)	(−6.05)	(−5.86)	(−4.44)
Observations	3723	3723	3723	3723	3723	3723	3723	3723
No of Groups	334	334	334	334	334	334	334	334
No of IV	204	231	142	142	157	157	238	238
AR(2) test	0.8647	0.8330	0.7133	0.7048	0.7541	0.7733	0.9407	0.9918
Sargan test	0.6046	0.6660	0.6075	0.6540	0.3201	0.3565	0.1833	0.4255

***, ** show the level of significance at 1%, 5%, respectively. Source: authors' calculations.

Table 7. The effect of Ceo dual on the relationship between firm risk and the level of tax avoidance.

	FRISK1	FRISK2
ETRt-1	0.0143 ***	0.0141 ***
	(44.98)	(40.65)
FRISK	−0.0205 ***	−0.0270 ***
	(−14.22)	(−18.72)
DUAL	−0.1817 ***	−0.2064 ***
	(33.88)	(35.11)
DUAL*FRISK	0.0339 ***	0.0491 ***
	(15.14)	(21.16)
LEV	0.1092 ***	0.1146 ***
	(−8.06)	(−8.55)
PPE	−0.0116	−0.0165
	(1.03)	(1.48)
SIZE	0.0237 ***	0.0237 ***
	(−14.26)	(−14.07)
GRTH	−0.0002	0.0085 ***
	(0.08)	(−3.83)
Constant	−0.3924 ***	−0.3875 ***
	(8.46)	(8.15)
Observations	3723	3723
No of Groups	334	334
No of IV	238	238
AR(2) test	0.9102	0.9489
Sargan test	0.9114	0.9325
Cut-off point	0.6056	0.5503
p-value	0.0000	0.0000

*** shows the level of significance at 1%. Source: authors' calculations.

Table 8. The effect of Board independence on the relationship between firm risk and the level of tax avoidance.

	FRISK1	FRISK2
ETRt-1	0.0167 ***	0.0170 ***
	(37.96)	(38.70)
FRISK	0.0646 ***	0.0553 ***
	(5.96)	(5.25)
BIND	0.0035 ***	0.0034 ***
	(−7.46)	(−7.68)
BIND*FRISK	−0.0013 ***	−0.0012 ***
	(−7.11)	(−6.48)
LEV	−0.0489	−0.0130
	(1.39)	(0.40)
PPE	0.0181	−0.0086
	(−0.73)	(0.35)
SIZE	0.0350 ***	0.0329 ***
	(−8.49)	(−8.31)
GRTH	0.0044	0.0028
	(−0.68)	(−0.44)
Constant	−0.9424 ***	−0.8744 ***
	(7.71)	(7.48)
Observations	3723	3723
No of Groups	334	334
No of IV	143	143
AR(2) test	0.7539	0.7689
Sargan test	0.6440	0.6647
Cut-off point	49.4956	47.7591
p-value	0.0000	0.0000

*** shows the level of significance at 1%. Source: authors' calculations.

Table 9. The effect of Board Size on the relationship between firm risk and the level of tax avoidance.

	FRISK1	FRISK2
ETRt-1	0.0149 ***	0.0144 ***
	(24.92)	(21.62)
FRISK	−0.2054 ***	−0.2537 ***
	(−3.57)	(−4.65)
BSIZE	−0.4523 ***	−0.4966 ***
	(5.94)	(6.25)
BSIZE*FRISK1	0.1008 ***	0.1272 ***
	(3.30)	(4.40)
LEV	−0.0351	−0.0089
	(0.98)	(0.27)
PPE	−0.0410	−0.0223
	(1.64)	(0.87)
SIZE	0.0472 ***	0.0418 ***
	(−12.53)	(−10.63)
GRTH	−0.0100	−0.0060
	(1.64)	(0.92)
Constant	−0.1836	0.0290
	(1.09)	(−0.17)
Observations	3723	3723
No of Groups	334	334
No of IV	157	157
AR(2) test	0.8929	0.9179
Sargan test	0.3529	0.4264
Cut-off point	2.0382	1.9951
p-value	0.0000	0.0000

*** shows the level of significance at 1%. Source: authors' calculations.

Table 10. The effect of Board Supervisors on the relationship between firm risk and the level of tax avoidance.

	FRISK1	FRISK2
ETRt-1	0.0175 ***	0.0174 ***
	(55.76)	(53.12)
FRISK	−0.1633 ***	−0.1546 ***
	(−7.88)	(−7.23)
BOS	−0.3265 ***	−0.3334 ***
	(8.51)	(8.04)
BOS*FRISK	0.1078 ***	0.1028 ***
	(7.18)	(6.62)
LEV	0.1347 ***	0.1613 ***
	(−6.61)	(−8.39)
PPE	0.0134	−0.0044
	(−0.84)	(0.27)
SIZE	0.0239 ***	0.0231 ***
	(−8.92)	(−8.48)
GRTH	0.0082 **	0.0067 **
	(−2.52)	(−1.96)
Constant	−0.0130	0.0170
	(0.13)	(−0.17)
Observations	3723	3723
No of Groups	334	334
No of IV	198	198
AR(2) test	0.9892	0.9827
Sargan test	0.3273	0.3457
Cut-off point	1.5146	1.5040
p-value	0.0000	0.0000

***, ** show the level of significance at 1%, 5%, respectively. Source: authors' calculations.

Regarding corporate governance variables, this study finds that while board independence and ETR are positive relations, other variables significantly negatively affect ETR. These results show that the lower the independence of BOD, the larger the board size, the larger the BOS size and CEO duality are associated with lower ETR, implying higher tax avoidance behavior. Managers are often opportunistic in that they have the motive to maximize net profit in order to increase bonuses. Thus, they may reduce tax-related costs, implying their tax avoidance behaviors. However, independent directors on the BOD perform a role as a monitoring function for managers' opportunistic behaviors. Firms with more independent members in BOD may reduce managers' opportunistic behaviors, resulting in fewer tax avoidance behaviors of managers. Additionally, the board of directors becomes the apex of decision control within the firm because of receiving authority for internal control and other decisions from the firm's shareholders. However, smaller BOD may contribute to easily in decision-making than larger BOD. Hence, smaller BOD may deny managers an opportunity to mask their rent extraction activities through engagement in excessive tax management practices. In other words, smaller BOD is less motivated to engage in tax avoidance strategies than larger BOD.

Similarly, when the CEO of a company also serves as the chairman of the board of directors, the CEO may have the same goals as the firm's shareholders. This role shows that CEOs may have more incentive to engage in tax avoidance practices to increase firms' profit, which raises CEOs' bonuses. The board of supervisors may help minimize conflicts of interest between the parties and, as a result, the CEO's interest is aligned with shareholders. The larger size of the BOS, the more diversified the skills and knowledge that the BOS brings to the corporates. Consequently, the interests of shareholders are protected, and the company's earnings are also increased. These arguments indicate that firms with larger BOS may have more tax avoidance behaviors.

For control variables, leverage and firm size have a significant positive relationship with ETR at 10%. These results show that high leverage and larger firms may have higher ETR, implying that these firms may do less tax avoidance behaviors. On the contrary, tangible assets significantly negatively affect ETR at 10%, which shows that firms with more tangible assets are more likely to be involved in tax shelter behaviors.

4.1.2. The Effect of Corporate Governance on the Relationship between Firm Risk and Tax Avoidance Behaviors

Tables 7–10 display the results related to the effect of Ceo dual, Board independence, board size and board of supervisors on the relationship between firm risk and tax avoidance, respectively.

Regarding explanation variables, the influences of these variables are similar to the findings found in Table 6. Highly leveraged and larger firms may have higher ETR, implying that these firms may do less tax avoidance behaviors. Meanwhile, firms with more tangible assets are more likely to be involved in tax shelter behaviors.

Interestingly, the crucial noticeable point is that the effect of firm risk on tax avoidance behaviors may depend on the quality of corporate governance. Suppose the CEO of a company also serves as the chairman of the board of directors (dummy variable is equal to one). In that case, the total effect of FRISK1 and FRISK2 are 0.0134 and 0.0221, respectively. These values show that an increase in proxies for firm risk is related to an increase in ETR. In the case of CEO duality, high-risk firms may engage more in tax avoidance strategies.

For board independence, this study finds that if the ratio of independent members in BOD is lower than 48.63% (the mean of cut-off points), firm risk and the level of tax avoidance are significantly positive. This link shows that the ratio of independent members in BOD is lower than 48.63% in firms; the higher risk may increase tax avoidance behaviors.

For board size, this study finds that if members in BOD is higher than six members (the mean of cut-off points), firm risk and the level of tax avoidance are significant positive relation. This link shows that firms have members in BOD higher than six members; the higher risk may increase tax avoidance behaviors.

For the board of supervisors, this study finds that if members in BOS are higher than three members (the mean of cut-off points), firm risk and the level of tax avoidance are significantly positive. This link shows that members in BOS are higher than three members, and the higher risk may increase tax avoidance behaviors.

5. Conclusions

According to research on the association between tax avoidance behavior and corporate risk, a high level of tax avoidance raises a company's risk. Previous research has found that corporate tax avoidance increases the risk of a corporation being audited, increases the likelihood of paying greater tax costs as a result of tax audits and fines from tax authorities and is a temporary approach that the business cannot use indefinitely (Choi and Park 2022). In other words, tax avoidance by a firm indicates that the company is engaging in a high-risk investment option. However, this study approaches the opposite direction of this relationship and finds that a firm level of risk also determines tax avoidance behavior. This result is a solid demonstration of the risk-return trade-off theory, where firms accept to increase their risk level in the future to achieve higher returns.

Indeed, this study analyzes the effect of firm risk on tax avoidance behaviors and the role of corporate governance in the relationship between firm risk and tax avoidance in Vietnam during the 2008–2020 period. The study applies the two-step GMM method to solve the endogeneity issues between our model's variables representing the governance structure and the level of tax avoidance, as mentioned in previous studies. The study findings support both hypotheses in that corporate governance and risk are significantly associated with corporate tax avoidance. The main finding of this study is that firm risk performs a significant role in determining tax avoidance behaviors. Notably, this study finds that low-risk firms are willing to risk tax authority challenges to achieve higher returns by engaging in more tax avoidance behavior. Moreover, our results show that the lower the independence of BOD, the larger the board size, the larger the BOS size, and CEO duality are associated with lower ETR, implying higher tax avoidance behavior. Our findings show that corporate governance mechanism performs a vital role in the relationship between firm risk and tax avoidance. In the case of CEO duality, high-risk firms may engage more in tax avoidance strategies. Additionally, in firms have (1) the ratio

of independent members in BOD is lower than 48.63%, (2) members in BOD are higher than 06 members and (3) members in BOS are higher than 03 persons, the higher risk may increase tax avoidance behaviors.

This study contributes to the management literature in two ways: (i) unlike previous studies, this study provides evidence of a link between risk and tax avoidance. (ii) simultaneously consider the influence of governance characteristics on this relationship to provide evidence of tax avoidance behavior that will occur at the top management level. The results of the study suggest that tax authorities and investors should be wary of corporate tax avoidance behaviors that have a variable level of risk from low to high, especially in increased volatility in profits over time. In addition, the study determined that good corporate governance performs a role in controlling future corporate tax avoidance behaviors. Indeed, studies in Vietnam lack empirical evidence for this relationship and its results are, therefore, a remarkable endeavor. As a study' implication, we strongly recommend that post-audit activities in tax liability should focus on corporations with fragmented profits, lack of external supervision mechanisms and a high degree of centralization of power in the management board.

However, this paper has a drawback. This article concentrated on publicly traded enterprises on the Vietnamese stock exchange. Furthermore, for corporate governance, this research only evaluated system-risk measurement, independence of the board of directors, board of directors, board of supervisors and duality of chairman and CEO. Additionally, this study lacks the optimal models to determine the factors which will influence to tax avoidance behavior. Future studies could look into other risk measurements, management behaviors and corporate governance audits in optimal models for tax behavior.

Notes

1 See more: https://en.vietnamplus.vn/vietnam-faces-increasing-tax-evasion-and-avoidance/172957.vnp, accessed on 25 December 2022.
2 See more at https://stats.oecd.org/, accessed on 25 December 2022.
3 Higher values of RISK and ETR imply that firms have lower firm risk and lower tax avoidance, respectively.

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