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Corporate tax avoidance:

Evidence from Vietnamese non-financial listed firms

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A thesis

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By Ha Kieu Oanh

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Abstract of a thesis submitted in partial fulfilment of the

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Abstract

Corporate tax avoidance: Evidence from Vietnamese non-financial listed firms

by

Ha Kieu Oanh

Vietnam, a transition economy, has moved from a centrally–planned economy to a market-oriented economy since the Doi Moi reform in 1986. With remarkable changes in the economy following the Doi Moi reform, Vietnam has become one of the fastest-growing developing economies in the world and is an investable market that caught the attention of many investors (World Bank, 2020). The transformation, however, has also brought new challenges, especially corporate governance practices and corporate income tax issues. The widespread use of tax incentives to promote investment and growth have recently resulted in slowing revenue growth. The light penalties and pervasive tax corruption weaken voluntary tax compliance and create more opportunities for firms to avoid taxes. There is a gap between a progressive legal framework and practice regarding a corporate governance code in Vietnam, especially the role of the board of directors (BoD) in addressing agency conflicts between stockholders and managers. The slow privatization and inadequate regulations for foreign ownership and the role of the BoD in protecting investors' interests remain costly lagging indicators for Vietnam. The code of governance mechanism, focusing on restructuring ownership and the BoD, needs to be revised as the country further opens and integrates into the world economy.

This study investigates the relationship between the BoD, corporate tax avoidance (CTA) and firm value using a sample of Vietnamese non-financial listed firms from 2010-2018. This study examines whether the BoD has any effect on firm tax behaviour, whether investors place a premium value on CTA activities and whether the BoD can affect the CTA-firm value relationship. To explore the relationship between the BoD, CTA and firm value, this study uses the Fixed effects (FE) estimator as the main estimation method to control for the time-invariant effects of the panel data. The study also uses the two-stage least-squares instrumental variables (2SLS/IV) and the system generalised method of moments (system-GMM) estimator to validate the results from FE because of the dynamic panel data and the potential endogeneity arising from the relationship between CTA and firm performance.

The empirical results from the regression models show that, among the attributes of the BoD, non-executive directors positively affect corporate tax avoidance. Broadly consistent with previous studies, this study also finds a positive impact of CTA on firm value in the sample of Vietnamese non-financial listed firms from 2010-2018. This means Vietnamese non-financial listed firms perceived CTA as a tax-savings device that can transfer cash from the government to firms in the context of generous tax incentives and lack of transparency as well as weak tax administration. Additionally, female directors can intensify the positive effect of CTA on firm value. However, investors no longer place a premium on CTA when a CEO is also the Chairman of the BoD because of the rent extraction effect of tax avoidance activities. The study's findings provide some practical implications for investors, firms and policymakers in revising and taking further reforms regarding corporate governance and corporate tax income toward accountability, social equity and sustainable development.

Keywords: Vietnam, Firm value, Board of Directors, Corporate tax avoidance, Agency theory

Acknowledgements

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Abbreviations

BoD	Board of Directors
BPLM	Breusch & Pagan's Lagrange multiplier test
BTD	Book-tax difference
CEO	Chief executive officer
CFO	Chief financial officer
CIT	Corporate income tax
CPI	Corruption perceptions index
CTA	Corporate tax avoidance
CG	Corporate governance
EIT	Export and Import Tariff
EM	Earnings management
ETR	Effective tax rate
FE	Fixed effects
GDP	Gross Domestic Product
GDT	General Department of Taxation
GLM	Generalized linear model
GLS	Generalized least squares
GMS	General meeting of shareholders
HOSE	Ho Chi Minh Stock Exchange
HNX	Hanoi Stock Exchange
IMF	International Monetary Fund
LSE	London Stock Exchange
NASDAQ	National Association of Securities Dealers Automated Quotations
OECD	The Organization for Economic Co-operation and Development
OLS	Ordinary least squares
Oxfam	Oxford Committee for Famine Relief
PIT	Personal income tax
PSM	Propensity score matching
RE	Random effects
ROA	Return on assets
SCT	Special consumption tax
S&P 500	Standard & Poor's 500 Index
SSC	State Securities Commission
System-GMM	System generalised method of moments
2SLS/IV	Two-stage least-squares instrumental variables
UK	United Kingdom
UN	The United Nations
UNCTAD	United Nations Conference on Trade and Development
US	The United States of America
VAT	Value added tax
VEPR	Viet Nam Institute for Economic and Policy Research
VND	Vietnamese dong
VSD	Vietnam Securities Depository
WTO	World Trade Organization

Chapter 1

Introduction

1.1 Research rationale

Corporate tax avoidance is considered a mechanism to transfer resources from the government to stockholders (Dyreng et al., 2017). The CTA mechanisms are based on accrual accounting and tax policies. For accrual accounting rules[1], to reduce current tax expenses, a firm can use existing tax–timing opportunities by deferring revenue and accelerating expenses such as depreciation (OECD, 2007). Based on tax policies, firms can take advantage of tax credits (such as research and development expenses), tax deductions, tax holidays or other tax incentives to reduce their tax burden (Holland & Vann, 1998; Zolt, 2015). Mo (2003) argues that tax avoidance is a way that a firm adopts tax law and tax loopholes to reduce its tax payments without breaking the tax laws. Thus, tax avoidance is considered a legitimate activity and is different from tax evasion[2]. In practice, it is difficult to separate these tax activities within the sophistication of the tax law and unclear tax gaps (Amidu, 2006). Specifically, taxpayers can manipulate legal terms to reduce their tax liabilities, leading to challenges to define which firms use the "black box" tax strategies to avoid taxes and which firms unconditionally comply with tax regulations (James, 1998). Tax avoidance activities that are against the spirit of the law are unacceptable and subject to penalty (Mo, 2003). For example, by employing legal transitions or transfer pricing to underreport revenue, a company can reduce its tax payments. This arrangement is considered "unacceptable" in Vietnam and different from other cases of acceptable avoidance such as investing in education where the tax rate is much lower than for other industries[3]. "Acceptable avoidance" is considered legitimate tax planning (Mo, 2003, p.3). Thus, adapting the definition of Hanlon and Heitzman (2010), in this study, CTA is broadly defined as "a continuum of tax strategies" that reduces explicit taxes (p.137). Depending on the level of aggressiveness to reduce taxes, this continuum includes tax minimisation (perfectly legal) at one end and tax evasion at the other end (Hanlon and Heitzman, 2010).

CTA is a complex subject that attracts the attention of stakeholders both at the macro and firm levels. In terms of the macro level, CTA leads to a significant loss in government revenue (Mo, 2003). Primarily, CTA is common in developing countries because of informal economic activities, preferred tax policy

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[1] The rule that income should be measured on the basis of when transactions occur or values change rather than when cash is actually paid or received (James, 1998, p 3).

[2] Tax evasion is considered an illegal manipulation of the taxpayer with the intention of escaping tax and subject to criminal or civil penalties (Mo, 2003, p. 2).

[3] Law on corporate income tax 2008 No 14/2008/QH12, amended by Law No. 32/2013/QH13 and Law No. 71/2014/QH13.

and weaker administrations (Carnahan, 2015). These countries could potentially lose over $213 billion a year to avoided taxes (Crivelli et al., 2015) and a loss of $100 billion a year in corporate income tax (UNCTAD, 2015). In response to the problem, many governments in developing countries have recently implemented fundamental tax reforms to deter the level of CTA (Shukla et al., 2011). However, modern risk management models have not been applied widely and CTA is still a pervasive problem in developing countries such as Vietnam (IMF, OECD, UN & World Bank, 2015).

At the firm level, dodging taxes does not always enhance firm value. A firm can engage in tax avoidance activities to exploit transfers from the public budget to stockholders to enhance its after-tax value (Dyreng et al., 2017). However, CTA is not necessary to enhance firm value because of its potential costs such as salaries for tax consultants, reputation costs and potential fines by authorities (Chen, Hu, Wang & Tang, 2014). Prior research has also provided evidence of the presence of agency cost of CTA. According to Chen and Chu (2005), CTA related closely to agency theory focuses on the relationship between the managers (agents) and the stockholders (principals) in a firm as the managers operate the firm on behalf of the stockholders. Managers can employ CTA for their own interests at the expense of stockholders because of opaque tax transactions and the incomplete contract between stockholders and managers. Managers can get an ex-ante compensation for their future efforts to reduce tax liabilities via tax avoidance activities. However, the level of compensation may not be commensurate with the level of their actual effort that reduces the motivation of managers in deciding the tax strategy. Desai and Dharmapala (2006) identify two motivations for managers to exploit tax avoidance activities, i.e., tax savings and managerial rent diversions. Based on the opacity of CTA, managers could undertake tax avoidance activities to create opportunities for managerial rent diversion to maximise their own benefit instead of shareholders' interests. Previous studies show mixed results in the valuation of CTA. For example, Ariff and Hashim (2014) find that tax avoidance brings tax savings for firms and hence enhances the after-tax value of 203 Malaysian listed firms from 2009 to 2011. However, Wahab and Holland (2012) show an opposite result for non-financial listed firms in the London Stock Exchange (LSE) from 2005–2007. Their result indicates that the tax costs outweigh the benefits from tax savings and therefore CTA could decrease a firm's value.

Kawor and Kportorgbi (2014) say the reasons behind the mixed results of the valuation implication of CTA and the substantial benefits of stockholders from CTA could be mediated by other factors. Prior research provides evidence that the governance mechanism is one moderating factor that influences the valuation of CTA (Desai & Dharmapala, 2009; Wilson, 2009; Ayer et al., 2011). For example, Ayer et al. (2011) find that the joint effect of CG and CTA on firm value is negative and significant in a sample of US-listed firms from 1987-2010. As one essential part of the CG framework, the BoD serves as an internal mechanism for monitoring and advising managers and, hence the BoD is expected to reduce agency conflicts between the managers and stockholders in tax planning strategy. The BoD affects the

tax planning strategy of a firm in two ways. CTA is one choice that a BoD can invest in to lower a firm's taxes and hence improve bottom-line performance. However, as a key role in monitoring management, the BoD can deter the level of CTA because of rent extraction (Lanis & Richardson, 2011). An effective board is responsible for overseeing whether the management team serves the best interests of the stockholders and inspects rent extraction from CTA activities employed by managers. Previous research provides mixed results on the effect of the attributes of the BoD on CTA and the valuation implication of CTA. For example, Zemzem and Ftouhi (2013) find that, as a symptom of an effective internal monitoring mechanism, female representation on the BoD has a negative impact on tax avoidance levels of 73 French listed firms from 2006 to 2010. Lanis and Richardson (2011) find that firms with a higher percentage of outside members on the BoD have lower tax avoidance levels in a sample of non-financial listed firms on the Australian Stock Exchange (ASE). They argue that outside directors can increase the monitoring ability of the BoD and hence reduce the risk of managerial rent diversion from tax avoidance activities.

The relationship between the BoD, CTA and firm value is debatable in the literature. Therefore, further investigation of the topic is needed, especially in developing countries, such as Vietnam, that face many challenges regarding corporate tax income and corporate governance matters and disputes. There is little research on the effect of the BoD on CTA and its valuation implication in prior studies.

1.2 Corporate tax avoidance and corporate governance in Vietnam

In Vietnam, following the Doi Moi[4] reform policy, Vietnam's tax system has changed significantly in the three main reform phases. The first phase of tax reform (1991-1995) concentrated on the establishment of the fundamentals of the tax system in a market-based economy. The second phase (1996-2000) focused on the introduction of modern tax laws such as VAT. The third phase of tax reform (2005-2010) focused on expanding the tax base, reducing tax rates and simplifying methods of tax declaration and payment. These changes were expected to meet the requirements of acceding to the WTO. Another round of tax reform has been implemented with the directions in "Tax Reform Strategy 2011-2020"[5]. In line with those directions, all Vietnam's major taxes (Law on VAT, Law on CIT; Law on PIT, the Law on SCT and the Law on EIT) have been amended and supplemented to promote competitiveness and exports, encourage investment, and create employment and growth. To achieve these goals, tax incentives are too generous in Vietnam. According to current law[6], tax incentives are applied in 57 sectors such as health care, education, high technology, agriculture and environmental

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[4] In Vietnam, the market- oriented economy was shifted from a centrally –planned economy via Doi Moi in 1986.
[5] Decision 732/QD-TTg dated May 17, 2011
[6] Law on corporate income tax 2008 No 14/2008/QH12, amended by Law No. 32/2013/QH13 and Law No. 71/2014/QH13

protection; 53 of 63 provinces (difficult socio-economic areas) and over 300 economic, high-tech and export processing zones. Large projects (over VND 6 trillion of investment capital for new projects and VND 10 trillion for expansion projects) tagged with certain conditions are also probably applied tax incentives. In Vietnam, tax incentives include reduced tax rates, tax holidays, tax deductions and tax credits. For example, preferential incentive tax rates of 10%, 15% and 17% are determined in certain cases, and a tax holiday is available for eligible taxpayers up to 4 years and then a 50% reduction in tax rate is applied for up to 9 years. Firms may be allowed to set up a tax-deductible research and development fund (up to 10% of annual profits before tax). Although there is no public data on Vietnam's firms' tax behaviour, in practice, many firms have used various techniques to dodge taxes by exploiting the tax loopholes from tax incentives, e.g., a firm can change its investment projects after a tax holiday to qualify for a new holiday. Location-based and sector-based tax incentives are also exploited to reduce tax payments that must be paid by corporations. A firm can transfer its resources to where the tax rates are lower by exploiting the related party transactions.

Vietnam also confronts pervasive tax corruption arising from the low salaries of the public sector, a compromising and paternalistic culture, the lack of transparency and the lack of a competent public sector (Nguyen et al., 2017). The authors point out that Vietnam performs poorly in terms of bribery and efforts to fight corruption; the corruption perceptions index (CPI) in Vietnam is about 30 on a scale of 0 to 100 for the 2011 to 2016 period. Evidence from a survey supported by the World Bank and the Government Inspectorate of Vietnam in 2012 shows that public officials intentionally prolong time and pressure firms with ambiguous regulations to make unofficial payments (World Bank, 2012). Over 30 per cent of registered firms made an unofficial payment or believed that their firm would be unfairly treated without bribery based on a survey conducted by VCCI of over 2,500 registered firms in 2015 (as quoted in Nguyen et al., 2017). This pervasive tax corruption and the perception of tax corruption by many stakeholders weaken voluntary tax compliance and create more opportunities for firms to avoid taxes. Giang (2015) points out that penalties for tax non-compliance have not been well specified and regulated at different levels. For example, taxpayers should be liable to a fine of 10% to 20% of the tax shortfalls for under-reporting tax liabilities. However, the penalty depends on the subjective judgment of the tax authorities. The penalty is also too light and has no deterrent effect (Giang, 2015). As a result, many listed firms, such as PV Gas (GAS), and DHG Pharmaceutical Joint Stock Company (DHG), have recently been punished for tax-related non-compliance[7]. According to VEPR (2020), CTA has become more and more complex with a wider scope and scale and sophisticated tricks. The average estimated tax revenue loss due to CTA ranges from 13.3 to 20.7 trillion dong (6.4% to 9.9% of

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[7] According to the tax inspection record (GDT, 2017), the biggest listed energy company PV Gas (GAS) was told to pay 106 billion VND (4.7 million USD) in tax arrears and administrative penalties for following improper procedures. DHG Pharmaceutical Joint Stock Company (DHG) reported that it had to pay an additional amount of 30.7 billion VND to the State budget for understating its income and other tax-related violations.

total corporate income tax revenue) per year during the 2013 to 2017 period. These figures are 2 to 4 times higher than those detected by regulatory agencies.

Table 1.1   The number of stocks listed and market capitalisation of the Ho Chi Minh and Hanoi Stock Exchanges (2010-2018)

Factor	Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
No. of stocks listed	HNX	367	393	396	377	365	377	375	383	376
	HOSE	275	301	308	301	305	307	320	354	373
Mkt Cap (trillion VND)	HNX	131.8	83.7	86.5	106.9	136.0	151.6	150.5	222.9	192.1
	HOSE	591.3	453.8	678.4	842.1	985.3	1146.9	1491.8	2614.2	2870.0

Source: Bloomberg

Following the Doi Moi reform transforming Vietnam from a centrally–planned economy to a market-oriented economy, privatization has been seen as an essential part of the ongoing restructuring of the economy since 1992 towards the efficiency of state-owned enterprises' operations. The Ho Chi Minh Stock Exchange (HOSE) was the first stock exchange established in Vietnam with two listed firms in 2000, followed by the Hanoi Stock Exchange (HNX) in 2005. The operation of both stock exchanges is supervised by the State Securities Commission (SSC) under the Securities Law (No. 70/2006/QH11) and other sub-law documents. By the end of 2005, only 41 firms were allowed to list on both stock exchanges. However, the number of stocks listed increased rapidly from 2006 to 2011 and increased slightly from 2011 to 2018. At the end of 2018, 749 firms were listed on the stock markets with 376 on the HNX and 373 on the HOSE (see Table 1.1). The number of listed firms on the HNX is slightly higher than the HOSE because the HNX has firms with lower paid-up capital with less restrictive rules for firms listing (Connelly et al., 2017). In market capitalisation, the figure for HOSE is significantly higher than for HNX. At the end of 2018, the market capitalisation of HOSE was 2870 trillion VND, over 10 times higher than HNX.

The legal framework for corporate governance includes the Enterprises Law[8], the Securities Law[9] and circulars[10] providing regulations on corporate governance applicable to public companies. To date, the internal governance structure includes: (1) a general meeting of shareholders (GMS); (2) a Board of Directors or management; (3) a chief executive officer (CEO); and (4) a control board (see Figure 1.1). First, the GMS is the highest decision-making body of a listed company. All ordinary shareholders with the number of votes corresponding to their respective shares can participate in the GMS. Nominations for the BoD and control board membership, the annual report and financial statements, dividend policy, re-organisation and dissolution, and extraordinary transactions are approved by the GMS

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[8] Enterprise Law 2005 (No. *60/*2005/QH11), replaced by Enterprise Law 2014 *(No*. 68-2014-QH13)
[9] Law on Securities *(N*o.70/2006/QH11), replaced by Law on Securities (No. 62/*2010*/QH12*)*
[10] Circular 121/2012/ND-CP*,* replaced by Decree 71/2017/ND-CP*.*
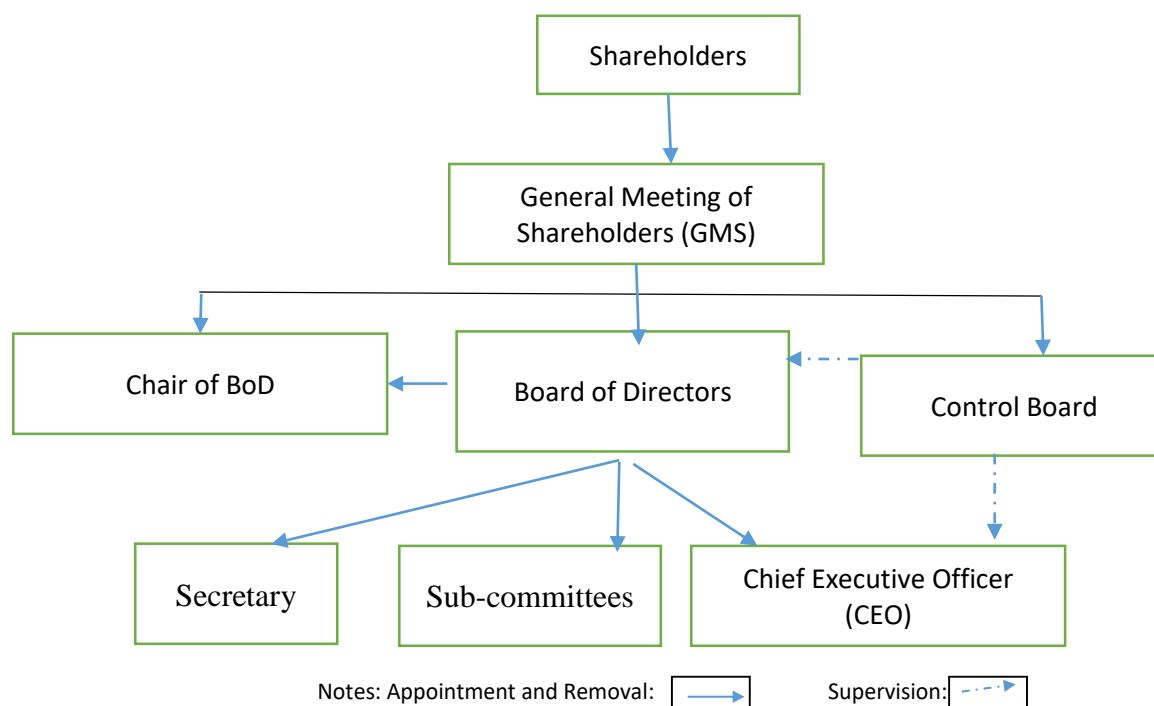
Figure 1.1   The Internal governance structure of a listed firm in Vietnam
Source: Minh & Walker (2008)

Second, the BoD plays a central role in the implementation of good governance practices despite the absence from the daily direction of a firm. The BoD guides and sets a firm's annual financial and business plan. Sub-committees and a secretary may be set up by the BoD to assist in its activities. The Chair of the BoD must be elected from the BoD or the GMS (Ministry of Finance, 2017). Theoretically, the BoD oversees the operation of the CEO and the executive board, as well as financial control to maximise firm value and the benefits to shareholders. However, from an agency perspective, the BoD has its own interests, which may conflict with those of the shareholders (Ertimur et al., 2010). Third, the CEO and the executive board are responsible for the daily operation of the firm and are appointed by the BoD. The CEO of a listed firm can be the Chair of the Board if the GMS approves. Members of the BoD can be members of the executive board (Ministry of Finance, 2017). Finally, the control board is independent of both the BoD and Executive Board and reports directly to the GMS. A major function of the control board is to carry out internal control procedures on operating the company (Ministry of Finance, 2017).

There is still a gap between a progressive legal framework and practice regarding the corporate governance code in Vietnam, especially in the BoD's role and structure. Slow privatization, inadequate regulations on foreign ownership and the BoD's role in addressing agency conflicts and protecting investors remain costly lagging indicators for Vietnam. Privatization in Vietnam has proceeded slowly because of the fear of losing control of authority and asset valuation issues (Tran et al., 2015). Thus, state ownership remains dominant, especially in some core sectors such as the energy and the utility

industry (water supply, waste management, electricity and gas provision). Despite slow privatization, ownership structure has become much more diversified with an increase in the different types of owners over the last two decades. As of March 31, 2019, the total number of securities accounts reached over 2.1 million, 29,004 of which were owned by foreign investors and 4,089 by institutional investors (VSD, 2019). Vietnam is an investable market drawing the attention of an increasing number of both foreign and domestic investors because of sustainable economic growth, strategic location and growing population with young skilled labour. However, there is a foreign ownership cap in the initial legal provision of 2009[11] that allows foreign investors to hold a maximum of 49% of shares. Despite the removal of the foreign ownership cap for Vietnamese listed firms in the current regulations[12], foreign ownership restrictions remain in some businesses such as 30% for commercial banks and 49% for companies conducting business in conditional sectors for foreign investors but no specific regulations on foreign ownership percentage are applied.

According to current regulations, the number on the BoD is from five to eleven members; one-third of the members must be non-executive members. Additionally, though the CEO of a non-financial listed firm can be the Chairman of the BoD if the general meeting of shareholders (GMS) approves, the proportion of firms with CEO duality has decreased over time. In 2018, less than one in four Vietnamese non-financial listed companies has CEO duality. For BoD gender diversity, there are no quotas for women on the BoDs. On average, women hold about 13.63% of board seats in non-financial listed firms which remains significantly behind the best practice of European jurisdictions, which have 30 to 40 per cent female boardroom representation. Most Vietnamese listed firms meet the requirements of the corporate governance code. However, the effect of the BoD on firm value is critical. To date, no study has examined the effect of the BoD on CTA and its valuation implications in Vietnam.

1.3 Problem statements

Prior research shows mixed results on the effect of the BoD on tax avoidance levels among firms. There is also little evidence on the impact of the BoD on a firm's tax avoidance behaviours in developing countries such as Vietnam. To date, there is no empirical evidence of the effect of the BoD on CTA and its valuation implications in Vietnam.

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[11] Decision No.55/2009/QD-TTg dated 15 April 2009 of the Prime Minister on percentage participation of foreign investors in securities market of Vietnam
[12] Decree No.60/2015/ND-CP dated 25 June,2015 of the Government

In Vietnam, government-promulgated circulars[13] provide guidelines on the tax risk management principles. Given the classification of compliance from the history of a tax audit – inspection in the guidelines, several typical cases with low compliance were identified such as having penalties related to tax registration, tax declaration, tax refunds or having accumulated losses exceeding 50 per cent of equity (Ministry of Finance, 2015). Other indicators from financial statements such as return on sales (ROS) return on equity (ROE), and net operating loss carryforward (NOL), are also analysed to provide further information related to tax avoidance in the guidelines. However, these indicators are based on experts' opinions[14] leading to a call for research on CTA in Vietnam. There is little research providing evidence of factors influencing the level of CTA in Vietnam. For example, Ha & Phan (2017) find that state ownership, firm size, profitability, leverage and tangible assets impact positively on CTA in a sample of 460 listed firms in the Vietnam Stock Exchange market from 2009 to 2015. However, to date, no further study has investigated the effect of the BoD on CTA in Vietnam.

Previous empirical studies have found mixed results on the valuation of CTA. For example, though Inger (2013) finds that tax avoidance could enhance the value of US firms from 1997-2010, Wahab and Holland (2012) show that CTA impacts negatively on firm value of non-financial listed firms on LSE from 2005 to 2007. Desai and Dharmapala (2009) argue that shareholder benefits from CTA could be mitigated because of managerial rent diversion. Using a sample of 862 US firms from 1993 to 2001, the authors find that CTA positively impacts valuation only in firms with institutional ownership over 0.6. This result indicates the effect of governance mechanisms on the relationship between CTA and valuation. However, Wahab and Holland (2012) do not find any effect of institutional ownership or the independence of the BoD on the valuation implication of CTA in 196 listed firms on the LSE from 2005-2007. Wahab and Holland (2012) claim that the insignificant joint effect between the BoD and CTA on firm value can be caused by the ineffectiveness of corporate governance mechanisms in the UK.

There is empirical evidence of the effect of CTA on firm value in Vietnam. For example, Khuong et al. (2020) find a positive relationship between CTA and firm performance in a sample of Vietnam listed firms from 2010-2016. However, the authors find mixed effects of CTA on firm performance. The authors did not use different proxies for CTA and control for the potential endogenous relationship between CTA and firm value. To date, no study has investigated the effect of the BoD on the CTA-firm value relationship in Vietnam.

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[13] " Circular No. 39/2014/TT-BTC dated March 31, guiding the implementation of goods sale and service provision invoices; Circular No. *204/2015/TT-BTC* dated 21 December 2015, providing for application of risk management in tax management".

[14] Experts of the WB supported the Vietnam Government in carrying out its 2015-2020 tax reform strategy.

1.4   Research objectives

Given the limited research on tax avoidance in Vietnam and a growing stream of literature on the determinants and effects of CTA, this study aims to examine the relationship between the BoD, CTA and the value of Vietnamese non–financial listed firms from 2010-2018.

The objectives of the study are to:

(1) investigate the effects of the BoD on CTA among Vietnam non–financial listed firms;

(2) examine the impacts of CTA on valuation among Vietnam non–financial listed firms; and

(3) examine the effects of the BoD on the potential association between CTA and firm value among Vietnam's non–financial listed firms.

1.5   Research methodology and data collection

1.5.1   Research methods

To examine the relationship between the BoD, CTA and firm value, we use the fixed effects (FE) estimator to control for the time-invariant effects in our panel data. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. We also add a set of industry and year dummies to our regression models to control for the existence of unobservable industry- and year-specific confounding factors.

FE regression is expected to mitigate the bias of unobserved and time-invariant firm characteristics on predictors that affect the outcome. However, a consistent estimate remains biased if there is a potential endogenous relationship between CTA and firm performance as suggested by Desai and Dhamapala (2009). This bias can be eliminated by estimating the fixed-effects model with instrumental variables. We use the two-stage least-squares instrumental variables (2SLS/IV) and system generalised method of moments (system-GMM) as alternative approaches to take into account the endogeneity between tax avoidance and firm performance and validate the regression results from fixed effects.

1.5.2   Data collection

To examine the impact of the BoD on CTA and the effect of CTA on firm value, our sample consists of 749 firms listed on the Vietnam stock market as of December 2018. 102 financial firms are excluded from the sample because of differences in firm characteristics and regulations. Financial firms focus on lending money and investing in financial assets and non-financial firms focus on other products such as materials, industrials, health care, technology and utilities. In Vietnam, firms' operations are regulated by the law on enterprises, but financial firms' operations must comply with the provisions

of the law on credit institutions because of their specific business products. There are also differences between non-financial and financial firms in recording financial statements and accounting policies.

Data collection begins in 2007 when the regulation on corporate governance applicable to listed firms (Decision No 12/2007/QD/BTC) was enacted. After excluding omitted observations, the final sample covers 513 non-financial listed firms from 2010 to 2018. Annual financial data are collected from the Bloomberg database and merged with the additional data related to the BoD that are hand-collected from firms' corporate governance and annual reports.

1.6   Research contributions

Although tax avoidance behaviour among firms is investigated in prior research, the relationship between CTA, BoD and firm value is still debatable in the literature. This study is the first attempt to comprehensively examine the relationship between the BoD, CTA and firm value in Vietnam, a transition economy. This study contributes to the literature in the following ways.

First, the study contributes to the literature on the effect of corporate governance on CTA. While most prior researches focus on financial characteristics and ownership structure as determinants of CTA, there is limited research on the relationship between the BoD and CTA, especially in transaction economies such as Vietnam. This current study is the first attempt to explore the impacts of the BoD on CTA among non-financial listed firms in Vietnam. This study is more advanced than prior research on firms' tax behaviour in Vietnam since using different proxies for CTA and controlling for the potential endogeneity arising between CTA and firm performance.

Second, the study shows how CTA is valued by stockholders in the context that generous tax incentives, weak tax administration and a high level of tax corruption can create more opportunities and motivation for firms to avoid taxes. This is the first comprehensive study to investigate the effects of CTA on firm value using different proxies for CTA and controlling for the potential endogenous relationship between CTA and firm value in Vietnam non-financial listed firms.

Third, this study extends the literature by exploring the impacts of corporate governance on the relationship between CTA and valuation. This is the first study that attempts to comprehensively examine the moderation role of the BoD on the CTA-firm value relationship. There is minimal research that examines the joint effect between the BoD and CTA on firm value, especially in developing countries.

This study also provides implications for policymakers, Vietnamese non-financial listed firms and investors. First, this study provides empirical evidence of the determinants influencing CTA including corporate governance mechanisms and financial factors. Thus tax authorities can consider and revise

a set of criteria on how to choose, classify and score criteria to choose firms for tax audits. Furthermore, this study provides implications for policymakers in revising the current corporate governance regulations and taking further reforms to enhance accountability to investors. Second, Vietnamese non-financial listed firms can consider the role of BoD as an internal corporate governance mechanism such as female representation and CEO duality in addressing agency conflicts and protecting stockholders' benefit. Finally, investors also can take the effectiveness of the BoD in monitoring management and protecting their interests into account when making an investment decision in the Vietnamese stock market. Information disclosure regarding the board room and taxes can also provide further information beyond financial analysis and tax planning strategy for investors when making an investment decision in Vietnamese non-financial listed firms. The finding of the study also is applicable to other countries such as Cambodia, Lao, Myanmar and some African with similar tax structure and tax avoidance issue such in their process of development.

1.7   Structure of the thesis

This study investigates the relationship between the BoD, CTA and firm value. Following the three main lines of this study, chapter two reviews prior research on the relationship between the BoD, CTA and firm value. Chapter three describes the data and methodology of the study. Chapter four discusses the empirical results and robustness tests. Chapter five provides the conclusion and a summary, discusses the limitations of the study and suggests recommendations for future research.

Chapter 2

Literature Review and Hypothesis Development

This chapter provides an overview of the relationship between CTA, BoD and firm value. Section 2.1 discusses the agency perspective of corporate tax avoidance. Section 2.2 presents the literature review and hypothesis development of the relationship between the BoD and firms' tax avoidance. Section 2.3 provides the literature review and hypothesis development of the valuation implication of CTA. Section 2.4 presents an overview and the hypotheses on the joint effect of the BoD and CTA on firm value. The research framework and chapter summary are presented in Sections 2.5 and 2.6, respectively.

2.1 Agency perspective of corporate tax avoidance

The "black box" of firms' tax strategies always attracts the attention of both academic researchers and stakeholders. Prior research provides evidence of several determinants of CTA such as firm financial characteristics (Edwards et al., 2013; Guenther et al., 2013; Richardson et al., 2015; Huang et al., 2016) and management systems such as tax audit and tax penalty (Hoopes et al., 2012). For example, Guenther et al. (2013) find that firm size, leverage and capital intensity positively affect CTA in a sample of US firms listed during 1987-2011. Evidence from Hoopes et al. (2012) shows the negative effect of the probability of an IRS audit on CTA in a sample of 10,626 US firms during 1992-2008. Tax avoidance behaviour among firms has also recently been explained by agency theory. The two main themes of the agency perspective of CTA are the agency theory in corporate governance and firms' tax avoidance behaviour.

On one hand, the agency theory has been developed and applied to explain many firms' financial decisions. Based on conflicts of interest between various contracting parties, Jensen and Meckling (1976) propose the agency relationship in publicly listed firms. When a widely spread group of stockholders cannot control the daily operation of the firms, they hire managers who are expected to serve their best interests. The agency theory primarily focuses on the contractual relationship between the agents (managers) and the principals (stockholders) in a firm because the agents operate the firm on behalf of the principals (Ross, 1973; Jensen & Meckling, 1976). The agency problem arises when there is a misalignment of interests between managers and stockholders. For example, firms' executives could invest in new projects that sacrifice short-term profitability in the expectation of higher earnings, but stockholders may oppose these projects because of a priority on short-term growth. Managers are also assumed to know more about their actions and day to day operations of a firm than owners who cannot control the managers completely (Laffont & Martimort, 2009). Thus, managers could exploit the asymmetric information to maximise their interests (personal wealth or

fringe benefits) rather than stockholders' wealth (Jensen & Meckling, 1976, Gitman et al., 2015). In particular, Blaylock (2016) argues that managers exploit firms' resources for their own purposes at the equilibrium level where the marginal costs (penalties or loss of value of equity that managers are holding or losing their job) equal the marginal benefits from extracting resources. In turn, shareholders try to control rent extraction by managers but they cannot monitor most of these activities because of the monitoring costs. Agency problems could lead to a negative impact on firm performance or illegal or unethical events such as fraudulent accounting (Tran& Holloway, 2014). Therefore, a range of both internal and external governance mechanisms should be applied to control managers' behaviour and reduce agency conflicts. The main internal governance mechanisms include the BoD, ownership concentration and executive compensation; external governance mechanisms focus on the market for corporate control.

On the other hand, a number of studies focus on tax avoidance behaviour among firms (Dyreng et al., 2010; Comprix et al., 2016; Huang et al.,2016; Park et al., 2016). Firms have incentives to engage in tax avoidance because they can reduce the substantial expense of income tax and so increase the cash available for reinvestment and growth (Chung et al., 2019). Evidence from Comprix et al. (2016) shows that firms with a higher level of CTA invest more than their counterparts in a sample of 5,245 US firms from 1986 to 2012. The results indicate that the cash savings from CTA can be used for investment. The authors also show that tax savings are invested in efficient projects if a firm had greater information transparency. Further, CTA is seen as a relatively low-cost source of internal funds for financially constrained firms that face an increase in the cost of external financing or difficulties in accessing external funds (Huang et al., 2016). Though CTA can be viewed as a tax-saving device and, hence, should enhance after-tax firm value, firms do not always have a high level of CTA. In other words, the CTA level varies among firms. This pattern can be explained by the costs arising from tax avoidance activities such as reputation costs and potential fines by tax authorities.

Agency problems result in another potential cost of CTA because CTA is decided by not only the taxpayers (owners) but also the managers. Armstrong et al. (2015) argue that CTA is one of the managers' investment decisions and thus depends on managers' personal incentives. Some studies show that managers have a statistically significant effect on firms' tax avoidance levels. For example, Dyreng et al. (2010) find that individual executives significantly affect the level of CTA in a sample of 908 CEOs, CFOs, and other executives[15] across US-listed firms between 1992 and 2006. However, they cannot specify what manager characteristics such as age, gender or CEO tenure affect the CTA level. In line with Dyreng et al. (2010), Novita (2016) finds empirical evidence of a positive effect of executive character[16] and the percentage of male executives on CTA in listed manufacturing firms in Indonesia

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[15] Executives were employed for at least three years in at least two different firms.
[16] Executive character is defined by corporate risk (the standard deviation of corporate earnings)

between 2009 and 2014. Additionally, empirical evidence about how managerial ability affects CTA is found in prior research. Koester et al.(2016) provide evidence of a positive relationship between managerial ability and CTA in a sample of US firms during 1994-2010. This result indicates that managers with higher managerial ability are likely to exploit more tax avoidance activities when there is greater variation in CTA opportunities in their industry. The authors also show several mechanisms to reduce taxes, including transfer pricing, making more R&D credit claims and investing in assets. Meanwhile, Park et al. (2016) find a negative relationship between managerial ability and CTA in a sample of Korea listed firms from 1999 to 2011. The authors' result shows that managers with higher managerial ability conduct fewer tax avoidance activities if the opportunity cost of CTA is higher than other management activities. They also show that better managers can mitigate the negative effect of CTA on valuation.

Though there is empirical evidence showing the effect of the management on tax planning in prior research, the question is whether managers serve stockholder interests in the tax planning strategy. According to Utomo et al. (2012), if managers make a tax avoidance decision without stockholders' approval, they could get all the potential benefits. In contrast, if the decision is approved by stockholders, the benefit will be distributed to both stockholders and managers through compensation incentives for managers. As pointed out by Păunescu and Gherghina (2016), the relationship between firms' governance and tax policy can be explained by agency conflicts caused by "human nature which acts on the benefit of its owner: managers, directors, board members and shareholders" (p. 17).

In the past two decades, several researchers, such as Chen and Chu (2005), Crocker and Slemrod (2005), and Desai and Drahamapala (2006), have also explained tax planning strategies in firms under the agency theory. According to Chen and Chu (2005), CTA is much more sophisticated than individual tax avoidance and related closely to agency theory because it involves the strategic behaviour of both stockholders and managers. They argue that managers could get ex-ante compensation for their future efforts to reduce tax pay-outs and net of any costs of employing tax avoidance activities. The compensation also covers the risk of avoidance activities such as being detected by tax authorities. However, the level of compensation may be inadequate with the level of their actual effort and tax avoidance transactions are opaque. Consequently, CTA could compromise the integrity of the company's internal control systems, hence managers could prioritise their personal interests at the expense of stockholders. Like Chen and Chu (2005), Desai and Dharmapala (2006) argue that stockholders may not want to be involved in tax avoidance activities, but managers prefer to engage in these activities to hide managerial rent extraction. For example, one mechanism by which managers

extract rents from CTA is "insider trading purchase profitability"[17] (Chung et al., 2015). Desai and Dharmapala (2006) explain that managers could extract a firm's resources by dodging taxes for their personal use because of the opacity and complexity of tax transactions. Using a sample of 914 firms between 1993 and 2001, they find that a firm with higher incentive compensation has a lower level of CTA; this negative relationship is mediated by poorly governed firms[18]. These results indicate that the benefits of CTA to shareholders are diminished by agency cost and compensation could decrease CTA as a result of the alignment of the interests between managers and shareholders. They suggest that strong governance mechanisms might reduce rent extraction and, as a consequence, limit tax avoidance activities. In line with Desai and Dharmapala (2006), Desai, Dyck and Zingales (2007) find evidence of rent diversion from CTA using a sample of Russian oil firms. The authors show that the company resources are moved from minority shareholders to offshore entities owned by managers. Lanis and Richardson (2011) also support the agency theory explaining CTA where CTA and rent extraction are complementary. However, in other situations, the negative relationship between CG and CTA can be explained by stakeholder and legitimacy theories[19]. Firms with better governance mechanisms should reduce the CTA level to further legitimise their existence because of the negative effects of CTA on society.

In contrast, Armstrong et al. (2015) and Blaylock (2016) criticize the agency perspective of CTA proposed by Desai and Dharmapala (2006). According to Blaylock (2016), the Desai and Dharmapala (2006) study does not directly examine the relationship between CTA and managerial rent diversion. Thus, the complementarity between CTA and rent diversion is questionable. Blaylock (2016) finds that the positive relationship between CTA and executive compensation is not significant in the US environment, but there is a positive relationship between CTA and future performance. These results indicate the traditional view of CTA as an enhancing value activity. In line with Blaylock (2016), Ribeiro (2015) shows that, in a sample of non-financial firms listed on LSE, firms with a higher percentage of insider ownership have higher tax avoidance levels. Ribeiro (2015) explains that insider ownership (managers holding a firm's shares) could mitigate agency conflicts between managers and shareholders. Consequently, firms with a higher level of insider ownership are willing to avoid more taxes and take advantage of tax savings. Armstrong et al. (2015) criticize the limitations of Desai and

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[17] Using privileged information, insider trading reallocates wealth between investors and then reduces outsiders to hold equity ownership and increases the firm's cost of equity capital. The authors find a positive relationship between CTA and managerial rent extraction (insider trading purchase profitability) in a sample of US firms from 1995 to 2010.

[18] Two distinct measures of corporate governance characteristics applied are institutional ownership and the index developed by Gompers et al. (2003), denoted by G (the number of antitakeover provision values from 0 to 24). Lower values of G and higher values of institutional ownership indicate better quality corporate governance.

[19] The theories based on the implicit "social contract" between a firm and society in which the firm seeks legitimization for its operations from different reference groups in society who have power and influence over the firm.

Dharmapala (2006) that equity compensation as one of the internal governance mechanisms is used only in well-governed firms to reduce rent extraction from CTA. Armstrong et al. (2015) argue that managers might be over-paid in poorly governed firms (managers could control the BoD) and, hence, no evidence has shown differences in compensation policy in both well-governed firms and poorly-governed firms. The authors explain tax avoidance behaviours among firms from a different view of agency theory. They posit that CTA might be perceived as a risky investment decision rather than an opportunity for managerial rent extraction. Therefore, without monitoring, managers can use a lower level (under-investment) or higher level (over-investment) than the optimum CTA because of unresolved agency conflicts. The authors find that poorly governed firms[20] engage in less (more) tax avoidance activities in the right (left) tail of the CTA distribution in a sample of US-listed firms from 2007 to 2011. Higher risk-taking equity incentives also increase the level of CTA; this positive relationship is stronger in the right tail of the CTA distribution. These results are consistent with the argument that managers are more likely to get greater personal benefits from CTA.

Taken together, explaining tax avoidance behaviour among firms as well as the effects of CG on CTA under agency theory is still debatable. In the literature, there are mixed results on the relationship between governance mechanisms and CTA.

2.2 Corporate tax avoidance and the Board of Directors Hypotheses

As one essential part of the CG framework, the BoD serves as an internal mechanism for monitoring and advising managers. Hence the BoD is expected to reduce agency conflicts between the managers and stockholders in tax planning strategy. When ownership and control are widely spread, stockholders elect the directors to the BoD to monitor the operation of the managers and the potential conflicts between stockholders and managers (Berk & DeMarzo, 2007). Thus, one main function of the BoD is overseeing the operation of the managers and the potential conflicts between stockholders and managers. In so doing, the BoD has the power to hire, compensate and replace managers, if necessary. Using information from the monitoring function, the BoD also plays an important role in communicating with managers which enable them to make good decisions for the firm (Kuma & Sivaramakrishnan, 2008). Thus, the BoD can be viewed as a key factor contributing to a good governance mechanism (Adams et al., 2010). Bhagat and Bolton (2008) argue that the BoD has the power to affect important decisions such as investment and governance policy.

For the tax strategy, the BoD must involve itself directly in a firm's tax planning as a part of risk management in the business and policy environment. An effective BoD is expected to reduce agency conflicts in tax planning between stockholders and managers (Steijvers & Niskanen, 2011). The BoD

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[20] The financial sophistication and the independence of the BoD are attributes of governance mechanisms.

affects the tax planning strategy of a firm in two different ways. If CTA is an enhancing-value activity, there is a potentially positive effect of the effectiveness of the BoD on CTA (Minnick & Noga, 2010).

Table 2.1   Selected studies on the relationships between the Board of Directors and corporate tax avoidance

Study	Sample	Research period	Regression method	The BOD and corporate tax avoidance
Minnick & Noga (2010)	456 S$P 500 companies	1996-2005	GMM	Staggered boards have a negative effect on managing taxes, but board independence has no significant effect on tax planning.
Lanis & Richardson (2011)	Firms listed on the ASE	2001-2006	Logit regression, OLS	The percentage of outside members on the BoD negatively impacts tax avoidance.
Zemzem & Ftouhi (2013)	73 French companies SBF 120 index	2006-2010	RE	Female representation on the board impacts CTA negatively, while board size impacts CTA positively.
Ribeiro (2015)	1531 listed firm on LSE	2010-2013	GLS	A firm with a larger board engages in less tax avoidance activities.
Armstrong et al. (2015)	US listed firms	2007-2011	Quartile regression	Board independence has not only a positive effect on CTA for low levels of CTA but also a negative effect on CTA for high levels of CTA.
Păunescu et al. (2016)	50 firms listed on NASDAQ	2000-2003	OLS, Quartile regression, GMM, GLM	The coefficient of board size and CTA is positive and significant.
Moore et al. (2017)	S&P 500 companies	1999-2013	GLM, GMM	The percentage of outside members on the BoD negatively impacts tax avoidance.
Lanis & Richardson (2017)	418 US firms	2006-2009	PSM	Female representation on board negatively impacts tax avoidance.
McClure et al. (2018)	1496 lised firms on ASE	2003-2015	OLS	A firm with a higher percentage of outside directors avoids more tax.

Source: Author's compilation

CTA is one choice that a BoD can invest in to lower the firm's taxes and hence improve bottom-line performance. In contrast, the BoD has a key role in monitoring management in limiting CTA (Lanis & Richardson, 2011). An effective board is responsible for overseeing whether the management team serves the best interests of the stockholders and inspects rent extraction from CTA activities employed by managers. Consequently, the level of CTA to mask rent extraction could be deterred. Previous studies provide mixed results on the effect of BoD attributes on CTA (see Table 2.1).

2.2.1 Board size and Corporate tax avoidance

Prior research shows empirical evidence on the effect of board size on firm performance and CTA. As pointed out by Yermack (1996), a firm with a smaller board exhibits better returns than its larger board counterparts. He argues that managerial stock ownership and compensation based on performance motivate directors on small boards to monitor effectively. In a sample of 452 large US firms ranked by Forbes from 1984- 1991, he finds a significant negative relationship between board size measured by the number of directors on the BoD and firm value measured by Tobin's Q. This result can be explained by the institutional behaviour theory in which the coordination problems overwhelm the advantages of many directors on the board (Jensen, 1993). Supporting Yermack (1996), other prior studies also show a negative relationship between board size and firm value (Mak & Kusnadi, 2005; Cheng et al., 2008; Guest, 2009). Conversely, other scholars (Kiel & Nicholson, 2003; Adams & Mehran, 2005) argue that board size positively affects firm value. Firms with a large board can benefit from the range of skills and experience of the directors on the BoD. Thus, larger boards might positively affect firm value because they can provide high-quality advice for strategic decisions. Further, outsiders, who are more likely to appear on a larger board, can provide better monitoring. Evidence from Kiel and Nicholson (2003) shows the positive effect of board size on firm value in a sample of 348 firms listed on the Australian Securities Exchange (ASX).

In tax avoidance planning, Wahab and Holland (2012) argue that board size can positively or negatively affect CTA. Firms with an optimum board size (a large board or a small board) that provides better monitoring could use more value-enhancing tax avoidance activities or less optimistic tax avoidance activities hence there are mixed results on the relationship between CTA and board size in prior research. Specifically, empirical evidence shows a positive effect of board size on CTA (Zemzem & Ftouhi, 2013; Păunescu & Gherghina, 2016). Zemzem and Ftouhi (2013) provide evidence of a significant, negative relationship between the number of directors on the BoD and the effective tax rate (ETR) as an attribute of CTA. The result indicates that firms with a small board engage in fewer tax avoidance activities. Consistent with Zemzem and Ftouhi (2013), Păunescu and Gherghina (2016) provide evidence of a significant, positive effect of board size on CTA in a sample of 50 firms listed on NASDAQ from 2000-2003. In contrast, Ribeiro (2015) shows that a firm with a larger board is less likely to engage in tax avoidance in a sample of 1531 listed firms on LSE from 2010-2013. Firms with large boards lead to problems in coordination and challenges in using complicated activities such as tax avoidance. Minnick and Noga (2010) do not show any significant relationship between board size and CTA in a sample of S&P 500 firms from 1996-2005. They explain the neutral relationship between board

size and CTA by controlling the endogeneity of the governance-performance relationship via the system GMM estimation approach.

In Vietnam, the number of members on the BoD ranges from five to eleven, who may not be shareholders of a Vietnamese listed firm[21]. Quang et al. (1998) find that a firm with a larger board has a lower level of management delegation. The authors explain that there is a "gap of power" culture, in which management does not share managerial power. The result was supported by Vo and Phan (2013). They find that the BoD's size impacts negatively on the performance of 122 non-financial listed firms in Vietnam from 2006 to 2011. Under the agency perspective of tax avoidance, this result indicates that a smaller board could represent a better monitoring mechanism in dealing with agency conflicts in making tax planning decisions. In line with Minnick and Noga (2010), we expect that CTA is one choice that a BoD can invest in to lower a firm's taxes and hence improve bottom-line performance in Vietnamese non-financial listed firms. This expectation arises from the widespread use of tax incentives, light penalties for non-compliance tax behaviour, and pervasive tax corruption that together weaken voluntary tax compliance and create more opportunities for firms to avoid taxes (Giang, 2015; Nguyen et al., 2017). Thus, we hypothesise the following relationship:

Hypothesis 1A: BoD size negatively affects the level of CTA in Vietnamese non–financial listed firms.

2.2.2 Board independence and Corporate tax avoidance

Prior research provides empirical evidence of the effect of the BoD's independence on CTA. According to Lanis and Richardson (2011), the BoD's independence, represented by the proportion of independent directors on the BoD, plays the most important role in monitoring management for shareholders' benefit. The combination of inside and outside directors, non-executive and executive directors on the BoD is a requirement of the corporate CG code across countries (Jackling & Johl, 2009). Decisions are expected to be different between independent directors, executive directors and non-executive directors on the BoD because of their particular strengths and positions in firms (Adams et al., 2010). Specifically, inside members or executive members on the BoD are assumed to hold internal information about the firm's activities and thus help the BoD make effective decisions. However, the dominance of insiders or executive directors on the BoD could increase agency conflicts and lead to rent extraction that expropriates shareholder wealth (Lannis & Richarson, 2011). In contrast, outside directors or non-executive directors have less incentive to manage the daily operation of a firm than insiders or executive directors, but the presence of these directors is expected to monitor more independently if agency conflicts between stockholders and managers arise (Hermalin & Weisbach,

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[21] Enterprise Law 2005 (No. 60/*2005*/QH11), replaced by Enterprise Law 2014 (No. 68-2014-QH13); Law on Securities (No.70/2006/QH11), replaced by Law on Securities (No. 62/2010/QH12); Circular 121/2012/ND-CP, replaced by Decree 71/2017/ND-CP

2003; Jackling & Johl, 2009). The dominance of outsiders or non-executive directors on the BoD could monitor managerial actions and strengthen the BoD's independence to protect shareholders' interests.

In terms of firms' tax policy, prior studies show mixed results on the relationship between BoD's independence and CTA. With the concerns on managerial rent extraction from tax avoidance activities, the negative effects of the presence of independent directors on CTA are documented in the literature. In particular, when examining the effect of board reforms on tax avoidance behaviour in a large sample of 72,102 firms in 29 countries from 1990 to 2012, Li et al. (2017) find a significant and negative relationship between board independence and CTA. They find that the level of CTA (both optimistic CTA and value-enhancing CTA) decreases after major board reform, typically focusing on increasing board independence. They argue that appointing more independent members to the BoD, or audit committee, and separating the CEO's and chair's roles can enhance the BoD's monitoring ability and mitigate agency conflicts and optimistic CTA. Moreover, the level of value-enhancing CTA decreases after reform because the new independent members on the BoD or audit committee are unfamiliar with the firm's daily operations and additional risks are likely to impose on managers after the reforms. This result supports Lanis and Richardson (2011) findings. Using the percentage of outside members on the BoD as a proxy for board independence, Lanis and Richardson (2011) find that more independent boards deter CTA via better governance in a sample of 32 Australian firms listed on the ASX between 2001 and 2006. In line with Desai and Dhamapala (2006), they argue that CTA creates opportunities for managers to employ rent extraction because of its opacity and complexity and, hence, the BoD has a key role in monitoring management to limit optimistic tax avoidance activities used by the CEO. They also explain that outside directors on the BoD are less likely to be involved in tax avoidance activities and corporate fraud, in general, because their compensation payments do not always depend on firm performance. Evidence from Sunarsih and Oktaviani (2016) shows a negative effect of board independence on CTA in a sample of manufacturing firms listed on the Indonesia Stock Exchange (ISE) from 2011 to 2014. The likelihood of CTA decreases if the BoD has a higher percentage of outside members.

In contrast, there is a positive relationship between the BoD's independence and CTA. Minnick and Noga (2010) argue that the BoD could choose tax avoidance activities to improve bottom-line performance by tax-saving effects. In line with Minnick and Noga (2010), Khaoula and Ali (2012) find that the independence of the BoD improves tax practice in a sample of 3000 S&P 500 firms from 1996-2009. Firms with a higher percentage of independent members on the BoD affect the ETR significantly negatively at the 0.1 level. Mulyadi et al. (2014) find that the BoD's independence has a positive effect on CTA in a sample of Indonesian firms listed on the ISE. However, evidence from Armstrong et al. (2015) shows that, without monitoring mechanisms, firms could under-invest or over-invest in CTA in

a sample of US firms between 2007 and 2011. They show that board independence has not only a positive effect on CTA for low levels of CTA but a negative effect on CTA for high levels of CTA. The authors argue that independent directors on the BoD should attenuate extreme levels of CTA viewed as clues of unresolved agency conflicts because of the recognition of potential costs and outside experience from other firms' tax positions.

The significant change in Vietnam's corporate governance has recently focused on the independence of the BoD. Although there is no evidence of an effect of BoD independence on CTA, prior research provides evidence of the relationship between the BoD and firm performance. Vo and Nguyen (2014) find that the independent members on the BoD positively impacts the performance of non-financial listed firms in Vietnam from 2008 to 2012. The authors' result indicates that the BoD's independence could help reduce agency conflicts in tax avoidance schemes. With the benefits from tax savings and the effect of the BoD independence on agency problems, we hypothesise the following relationship:

Hypothesis 1B: The BoD's independence positively affects CTA of Vietnam non–financial listed firms.

2.2.3 Female representation on the Board of directors and Corporate tax avoidance

Regarding gender diversity on the BoD, Adams and Ferreira (2009) argue that the effect of female members on the BoD is similar to the effect of independent members of the BoD on CTA. Drawing information from the IRRC Director Data and ExecuComp between 1996 and 2006, Adams and Ferreira (2009) find that female members of the BoD behave differently from male members. In particular, female directors provide better communication among members of the BoD and different opinions and experiences to the boardroom. Moreover, female directors attend board meetings more regularly than male directors; this better board participation could lead to stricter monitoring. As pointed out by Jianakoplos and Bernasek (1998), women are more risk-averse than men in making decisions and are more willing to comply with tax regulations (Mason & Calvin, 1978; Orviska & Hudson, 2003). Prior research provides evidence of the female directors on firm performance (Liu et al., 2014; Terjesen et al., 2016; Nadeem, 2020). From the differences between male and female directors, the presence of women on the BoD may have a positive effect on the BoD's effectiveness in monitoring agency conflicts between shareholders and managers in the tax planning strategy. Several empirical studies find that the presence of women on the BoD can decrease the CTA level. In particular, Zemzem and Ftouhi (2013) find that the proportion of females on the BoD has a significant positive effect on the effective tax rate. This result indicates that firms with a higher percentage of women on the BoD use less CTA than their counterparts. They explain that female members are more likely to be independent and thus enhance the effectiveness of the BoD in controlling rent extraction from CTA. Consistent with Zemzem and Ftouhi (2013), Richardson et al. (2016) show that a firm with more than one female member on the BoD is less likely to engage in tax avoidance activity in a sample of 205 Australian listed firms from

2006-2010. Their result supports Adams and Ferreira (2009) that female directors have a positive impact on board effectiveness in addressing agency conflicts between managers and stockholders and protecting stockholders' interests. Further, they find that the incidence of CTA is not different between firms with one woman on the BoD and firms without women on the BoD. However, Khaoula and Ali (2012) do not find any significant relationship between BoD gender diversity and CTA in a sample of 300 large US firms from 1996-2009. The result can be explained by the negligible proportion of females on the BoD.

Although CG codes for listed company reflecting OECD principles of CG was promulgated by the Vietnam Ministry of Finance, the BoD's gender diversity was not mentioned in Vietnam and there is no quota of female representation on the BoD in Vietnamese non-financial listed firms. According to Vu et al. (2018), women's opportunities for career advancement and leadership in Vietnam are still restricted and undermined by oppressive gender norms. However, Nguyen et al. (2015) show that women's rights and gender equality in firms have recently improved in Vietnam. From a sample of 122 listed firms on both the HOSE and HNX from 2008-2011, they find that the coefficient of the percentage of women on the BoD and Tobin's Q is positive and significant. This result indicates that female directors on the BoD enhance firm value. This result is consistent with Vo and Phan's (2013) contention that female members on the BoD have a positive impact on the performance of Vietnam non-financial listed firms. Under the agency perspective, female members are expected to enhance the effectiveness of the BoD and positively affect firm performance via value-enhancing activities. Thus, we hypothesise the following relationship:

Hypothesis 1C: Female representation on the BoD positively affects CTA of Vietnam non-financial listed firms.

2.2.4 CEO duality and Corporate tax avoidance

CEO duality refers to the CEO also being the Chair of the BoD, which could affect agency conflicts relating to CTA. Though the CEO can better understand a firm's operations comprehensively and make better decisions when also Chair of the BoD, Jensen (1993) argues that separation of the Chair of the BoD could contribute to an effective monitoring mechanism over management performance. If the CEO is also a Chair of the BoD, he or she cannot separate his or her personal benefit from the shareholders' interests when monitoring the board. In terms of CTA, Wahab et al. (2017) argue that CEO duality leads to weak governance and increases managerial rent extraction from tax avoidance activities. However, they find that the coefficient of CEO duality and CTA is insignificant. Similarly, Minnick and Noga (2010) do not find any significant relationship between CEO duality and CTA; the neutral relationship results from controlling for endogeneity problems.

In practice, there is an increasing number of firms that replace their existing CEO duality structure with a non-dual structure (Chen, Lin & Yi, 2008). In Vietnam, according to the Ministry of Finance (2012), "a chairman/chairwoman of a board should not be in the position of the CEO of a company unless this duality is approved by the annual general meeting of shareholders". However, there is evidence of a positive relationship between CEO duality and firm performance in Vietnam. Vo and Nguyen (2014) find a positive relationship between CEO and firm performance in a sample of 177 listed firms on HOSE from 2008-2012. They show that the coefficient of CEO duality and ROA is positive and significant. The coefficients of CEO duality and other proxies for firm performance (ROE, Tobin's Q, Z-score) are positive but insignificant. The results support the finding in Vo and Phan (2013) that CEO duality could improve a firm's performance. Although there is no evidence of the effect of CEO duality on CTA, we expect that firms with CEO duality are more likely to engage in tax avoidance activities to improve firm performance from tax-saving effects. Additionally, the CEO who is also the Chair of the BoD has more motivation to avoid taxes because of the rent extraction of CTA. Thus, we hypothesise the following relationship:

Hypothesis 1D: CEO duality positively affects the CTA of Vietnamese non-financial listed firms.

2.3 Corporate tax avoidance and firm value

According to Mo (2003), tax avoidance reduces the government budget and increases after-tax income for taxpayers. Hoofman (1961) argues that CTA could reduce expenses substantially from income tax and divert cash from the government to firms. However, CTA comes with costs, including consultant costs, penalties, reputation costs, political costs and agency costs. In particular, because of the opacity and complexity of tax avoidance activities, firms might need to pay fees to tax consultants to design and employ tax avoidance transactions. Further, as pointed out by Mo (2003), tax avoidance activities might be subject to penalties by tax authorities. Penalties can also lead to reputation costs, which could decrease the public perception of the firm, the scrutiny of outside stakeholders and its value. For example, Hanlon and Slemrod (2009) find empirical evidence that the stock price decreases in firms with a high level of CTA in a sample of 97 US firms from 1990-2004 identified in 108 articles relating to tax avoidance. According to Mills et al. (2013), if a firm is detected as a tax avoider, it can be exposed to the political cost of being labelled a "poor corporate citizen" and thus loses its political favour, such as increased regulatory oversight. Agency cost is another potential cost of CTA because of the role of managers who are not taxpayers or stockholders in making tax management decisions. Desai and Dharmapala (2006) argue that there are agency conflicts between managers and stockholders in deciding firms' tax planning. Managers could transfer the firm's resources from shareholders for their personal use based on asymmetric information and the complicated transactions of CTA. Thus, based

on the cost-benefit analysis of CTA, mixed results on the relationship between CTA and firm value are found in previous studies (see Table 2.2).

Table 2.2   Selected studies on the relationships between company tax avoidance and a firm's value

Author(s)	Research sample	Research period	Regression method(s)	Hypothesised signs
Ariff & Hashim (2014)	203 listed firms in Malaysia	2009-2011	OLS	+
Wahab & Holland (2012)	196 listed firms on LSE	2005-2007	Random effects, fixed effects, OLS	-
Ftouhi et al. (2015)	73 listed firms on EURONEXT 100	2008-2012	GLS	-
Desai & Dhamapala (2009)	862 US firms	1993- 2001	OLS, fixed effect, IV	0
Chen et al. (2014)	Chinese listed firms	2001-2009	Fixed effect	-
Santa & Rezende (2016)	Brazilian listed firms	2006 to 2012	Random-effects	-
Park et al. (2016)	Listed firm on the Korea Exchange	1999- 2011	OLS, 2SLS/IV	-
Inger (2013)	The largest U.S. multinational firms (Fortune 500)	1997-2010	OLS	+
Kawor & Kportorgbi (2014)	22 listed firms on the Ghana Stock Exchange	2000-2011	OLS, IV	0

Source: Author's recompilation

The effect of CTA on firm value can be negative or neutral if the agency cost of CTA offsets or exceeds the net benefit of CTA (net tax saving effect of CTA after taking into account other tax costs of CTA). Under agency theory, tax-saving effects that could enhance firm value arise only in situations where managers serve the best interests of stockholders (Wilson, 2009). In other cases, as pointed out by Mironov (2013), managers can transfer firms' resources not only from tax authorities to firms but also from stockholders to managers or other stakeholders.

Evidence from Desai and Dharmapala (2009) shows that CTA positively affects firm value, but this relationship is insignificant in a sample of 862 US-listed firms from 1993-2001. They explain from the agency perspective of CTA that the tax-saving effect may offset the managerial rent extraction effect related to CTA. In line with Desai and Dharmapala (2009), Katz, Khan and Schmidt (2013) indirectly examine the relationship between CTA and firm value by testing the effect of CTA on the relationship between current and future profitability in a sample of US-listed firms from 1968-2010. They find that

the positive relationship between current profitability and future profitability is mitigated by CTA. This result indicates that managers divert tax savings towards rent extraction, perquisite consumption or value-destroying projects. Using DuPont analysis, the authors also show that the lower profit margins lead to lower future profitability in firms that engage in more tax avoidance activities. The negative effect of CTA on valuation is found in not only the US setting but also in other settings. In particular, Mironov (2013) shows the effect of income diversion measured by the sum of net transfers to spacemen[22] on firm performance in Russia. Using a large sample of 243 million transactions accounting for over 75% of all banking transaction and 45,429 privately held firms in Russia from 2003-2004, the author finds that income diversion represented by spacemen have a significantly negative impact on firm performance. To analyse further the components of income diversion, the author assumes that if the CEO is also the owner, then income diversion includes only tax evasion. Otherwise, the income diversion includes both tax evasion and managerial diversion. Consequently, the author finds that both tax evasion and managerial diversion have significantly negative effects on firm performance in firms where the manager is not its owner and the effects of managerial diversion are more pronounced than the effect of tax evasion on firm performance. The author does not find any positive effect of tax evasion on firm value for firms where the manager is also its owner. This result can be explained by other agency conflicts between stockholders and debt holders. If firms can transfer resources from the government, then they can hide income from debt holders leading to difficulty in accessing the capital market for these firms. The incentives for managers to invest their effect in revenue growth and value creation is deterred in firms that engage in more tax avoidance activities. Like Mironov's (2013) study, Ftouhi et al. (2015) find a negative relationship between CTA and firm value in the European context. Using a sample of 73 firms in the Euronext 100 index from 2008–2012, they find that managers have the motivation to reduce tax expense via tax savings measured by the gap between the ETR and the statutory tax rate. However, the ETR as a proxy for CTA affects firm value negatively because of high agency costs. Evidence from Park et al. (2016) also shows the negative effect of CTA on valuation in a sample of firms listed on the Korean Exchange (KRX) from 1999-2011. Wahab and Holland (2012) show similar results in a sample of 196 non-financial listed firms on LSE from 2005–2007.

In contrast, Hoofman (1961) argues that CTA positively affects firm performance based on the assumption that tax costs arising from CTA are less than tax benefits. Like Hoofman's (1996) study, Inger (2013) posits that tax avoidance is viewed as a net present value-creating activity in which managers actively try to divert money from the government to the firm and then reinvest it or return it to stockholders as a dividend. Katz et al. (2013) also point out that tax savings from CTA can be

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[22] Spacemen are firms that pay no or negligible taxes. Spacemen satisfy all of the following criteria: the ratio of taxes paid to the difference in cash inflows and outflows is less than 0.1%; the firm pays less than $7.2 in sales and services tax per month; and the firm's cash inflows are higher than its outflows. In Russia, net transfers to spacemen accounted for around $49 billion (11.4% of GDP) in 2003 and $77 billion (13.1% of GDP) in 2004.

invested in effective projects and thus enhance firm value. Consistent with the expectation that CTA could enhance firm value because of the tax-saving effect, there are several pieces of empirical evidence about the positive relationship between CTA and firm value. Blaylock (2016) finds a generally positive effect of CTA on future performance in a sample of US-listed firms. For a one-standard-deviation increase in tax-avoidance measures[23], the return on assets increases from 0.2 percent to 0.6 percent. Ayers et al. (2011) find evidence of the positive effect of tax deferral as one mechanism of CTA on both stock returns and firm future profitability, which consequently enhances the firm's value in a sample of 56,299 US-listed firms from 1987-2010. They argue that firms could use the cash tax savings for investment or to reduce external financing during the deferral period through tax deferrals being viewed as interest-free loans from tax authorities. They also find these positive effects are enhanced in firms with greater ability to invest tax cash savings in effective projects and financially constrained firms. Evidence in Inger (2013) provides further information on the relationship between each mechanism of CTA (stock option tax deductions, accelerated tax depreciation deductions, deferral of the residual US tax on foreign subsidiary income) on firm value in the largest US multinational firms from the 2005 Fortune 500 from 1997-2010. The author finds that though tax avoidance generated by stock option tax deductions has a significant positive effect on firm value, there is a neutral relationship between tax avoidance arising from accelerated tax depreciation deductions and firm value. Additionally, tax avoidance stemming from the deferral of residual U.S. tax on foreign earnings has a negative effect on firm value. These results can be explained by "varying risk profiles across tax reduction strategies, permanent versus temporary nature of tax savings, differing tax planning costs and implicit taxes, and contrasts in disclosure of tax avoidance activities" (Inger,2013, p. 17).

Though most of prior research focuses on developed markets, especially the US, there are several studies on the effect of CTA on firm value in developing and emerging markets. In particular, consistent with Desai and Dharmapala (2009), Kawor and Kportorgbi (2014) find a neutral relationship between CTA and valuation because of the contrary effects between tax savings and managerial rent extraction from CTA on firm value in a sample of 22 listed firms on the Ghana Stock Exchange from 2000-2011. Evidence from Koanantachai (2013) also shows that tax avoidance measured by ETR does not affect firm value in a sample of 512 firms listed on the Stock Exchange of Thailand from 2007-2012. Evidence in Zhang et al. (2017) shows that, in China, the negative effect of managerial rent extraction from CTA on valuation exceeds the positive effect of tax savings on valuation. Using a sample of China-listed firms from 2004-2012, the author finds a significant, direct negative relationship between CTA and firm

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[23] Tax avoidance is measured by the three following proxies: adjusted book-tax differences (Desai and Dharmapala, 2006); adjusted permanent book-tax differences (Frank et al., 2009) and likelihood that a firm is currently engaged in a tax shelter (Wilson, 2009).

value despite an indirectly positive effect of CTA on valuation via the monitoring role of firm profitability and growth performance. This result is consistent with Chen et al. (2014) in which the valuation of Chinese listed firms from 2001-2009 is diminished by tax avoidance activities. Santa and Rezende (2016) show a negative relationship between CTA and firm value in Brazil. They find that a one-point increase in tax avoidance measured by book-tax difference is associated with a 5.96 decrease in Tobin's Q in a sample of 323 listed firms on the stock market from 2006-2012. This result implies that investors are concerned about the risks of CTA and thus adjust their stock return expectations. In contrast, Ariff and Hashim (2014) examine and find a positive effect of CTA on firm value in Malaysia. Using a sample of 203 firms listed on the MCG index from 2009-2011, the authors find that for a one-point increase in tax avoidance measured by the ETR, the market value is expected to increase by MYR 1,976 million. This result indicates that investors view CTA as a value-enhancing activity.

In Vietnam, the tax system has recently been reformed but tax administration capacity is still weak, and tax incentives are very generous leading to more opportunities for firms to avoid taxes (Oxafarm, 2017). The lower tax rate can be applied in many undeveloped socio-economic areas, special economic zones and sectors such as health care, education, high technology, agriculture and environmental protection. A firm can transfer its resources to where the tax rates are lower by using related party transactions. Additionally, Vietnam has confronted pervasive tax corruption and light penalties applied for non-compliance tax behaviour that, in turn, weaken voluntary tax compliance and create more opportunities for firms to avoid taxes (Giang, 2015; Nguyen et al., 2017).

According to Nguyen et al. (2017), Vietnam also confronts pervasive tax corruption arising from low salaries in the public sector, a compromising and paternalistic culture, a lack of transparency and the lack of a competent public sector. The authors point out that Vietnam performs poorly in terms of bribery and efforts to fight corruption; the CPI for Vietnam is about 30 on a scale of 0 to 100 for the 2011-2016 period. Evidence from a survey reported by the World Bank shows that public officials intentionally prolong time and pressure firms with ambiguous regulations to make unofficial payments (World Bank, 2013). Over 30 percent of registered firms made an unofficial payment or believed that their firms would be unfairly treated without bribery based on a survey conducted by VCCI on over 2,500 registered firms in 2015 (as quoted in Nguyen et al., 2017). This pervasive tax corruption and the perception of tax corruption by many stakeholders weaken voluntary tax compliance and create more opportunities for firms to avoid taxes. Giang (2015) points out that penalties for tax non-compliance have not been specified and regulated at different levels. For example, taxpayers are liable to a fine from 10% to 20% of the tax shortfalls for under-reporting tax liabilities. The penalty not only depends on the subjective judgment of the tax authorities but also has no deterrent effect (Giang, 2015). The combination of a lack of strict law and bribes between firms as taxpayers and tax authorities leads to

low penalties or low probability of being detected as a "tax avoider" and hence reduces the costs of CTA such as fines or reputation costs. Thus, we hypothesize the following relationship:

Hypothesis 2: Tax avoidance positively impacts firm value of Vietnam non-financial listed firms**.**

2.4   The Board of Directors and the tax avoidance - firm value relationship.

As discussed above, the effect of CTA on valuation varies across firms, industries and countries. Though the incentive for a firm to engage in CTA is a tax saving effect, tax avoidance activities do not necessarily enhance stockholders' wealth.

Kawor and Kportorgbi (2014) argue that it might be the reason behind the mixed results of the valuation implications of CTA and the substantial benefits to stockholders from CTA might be mediated by other factors. One factor pointed out by Wang (2011) is corporate opacity[24]. Wang (2011) argues that corporate opacity could create more opportunities for managers not only to extract a firm's resources from CTA but also to enhance shareholders' wealth. In a sample of S&P 1500 firms from 1994-2001, Wang finds that, overall, CTA enhances firm value. However, the interaction coefficient of tax opacity and CTA is negative and significant. This result indicates that the value premium placed by investors decreases in firms with less transparency. Consistent with Wang (2011), Chen et al. (2014) find that corporate transparency affects the negative relationship between CTA and firm value in a sample of listed firms on the Shenzhen Stock Exchange (SZSE) from 2001-2009. Based on the rank of corporate information disclosure from SZSE's assessment as an attribute for corporate transparency, CTA enhances firm value only in firms with a high level of information quality. Prior research provides evidence that the governance mechanism is another moderating factor influencing the valuation of CTA (see Table 2.3).

Desai and Dharmapala's (2009) study was the first to examine the role of governance structure on the valuation implication of CTA. The authors suggest that CTA causes a tax-saving effect and a managerial rent diversion simultaneously. Though tax savings could increase the after-tax value of a firm, managerial rent diversion could decrease shareholders' wealth as managers transfer a firm's resources for their own purposes. They argue that the tax-saving effect is offset by the managerial extraction effect, especially in poorly governed firms in which the weakness of governance could provide more opportunities for managerial rent diversion via CTA. Using a sample of 862 US firms from 1993-2001,

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[24] Corporate opacity is a composite index (ranging from 0.1 to 1.0) from four individual: press coverage, trading volume, analyst following and earnings quality, ranging from 1 to 10 with the most transparent firms taking a value of 1 (Wang, 2011).

they provide evidence of a significantly positive effect of CTA on valuation in well-governed firms[25]. This result indicates that the shareholders benefit from the firm's tax avoidance activities is mitigated by agency conflicts. In other words, if shareholders can control the managers, CTA could contribute to an increase in firm value. Similarly, Wilson (2009) finds a significantly negative relationship between CTA and firm value in poorly governed firms. He examines the stock return of 33 US firms relating to tax avoidance activities from court records and press reports for the period during, before and after the tax sheltering participation in the presence of a governance mechanism. After predicting firms that are more likely to engage in tax avoidance activities, Wilson finds that tax shelter firms with strong governance (corporate governance score above the sample's median) have a better performance. This result indicates that the combination of CG and CTA positively affects firm value.

Consistent with Desai and Dharmapala (2009) and Wilson (2009), Ayer et al. (2011) find that CTA benefits managers rather than stockholders in poorly governed firms leading to a decrease in firm value in a sample of 5,977 US firms from 1987-2010. Although they find that tax deferral has a significantly positive effect on firm value measured by future profitability, the interaction coefficients between CTA and CG (measured by the G- and E-index) is significantly negative. Herron and Nahata (2018) re-examine the valuation implication of CTA in the US setting. They find a significantly negative relationship between the book-tax gap (BTG) as a proxy for tax avoidance and Tobin's Q. Using institutional ownership (IO) as an attribute of CG, they also show that the interaction coefficient between IO and BTG is positive and significant. This result indicates that CG attenuates the negative effect of CTA on valuation.

Evidence in Tang (2017) shows that governance mechanisms could explain the variety of effects of CTA on firm value across countries. In a sample of 46 countries from 2001-2010, they show that a significantly positive relationship of CTA and valuation is found in 11 countries, but a negative effect of CTA on firm value exists in two countries (Russia and Turkey) where the country-level of CG is low. The results indicate that CTA is less value-enhancing in countries with a high likelihood of self-dealing, lax legal enforcement and poor corporate governance. They explain that the weakness of the legal protection of minority stockholders and governance mechanisms might lead to skepticism from stockholders about rent extraction activities of managers and value enhancement of CTA. In contrast, investors could reward a value premium to CTA in countries with strong minority shareholder protection and governance mechanisms because they expect that tax savings will be paid back to them. This result is consistent with Desai and Dharmapala's (2009) study.

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[25] Using institutional ownership as a proxy of corporate governance, Desai and Dharmapala (2009) define well-governed firms as those with institutional ownership over 0.6 because "institutional investors have greater incentives and capacity to monitor managerial performance".

Inconsistent with Desai and Dharmapala (2009), Blaylock (2016) finds no evidence that governance mechanism affects the relationship between CTA and firm value in the US. Though he shows that CTA[26] has a significant positive effect on future performance, this positive effect is not diminished in poorly governed firms[27]. The interaction term between tax avoidance and weak governance is generally insignificant. He suggests that the absence of managerial rent extraction from CTA and the dominance of a tax-saving effect derive from strong governance mechanisms in the US. In addition, Wahab and Holland (2012) find that governance mechanisms do not affect the relationship between firm value and CTA in the UK context. Supporting the agency perspective of tax avoidance, the authors show that CTA negatively affects firm value; this negative effect is robust to controlling for the percentage of non-executive members on the BoD and institutional ownership as attributes of CG. However, the market value of equity decreases in firms with high institutional ownership. Moreover, the interaction coefficients between CTA and both attributes of CG are insignificant. These results can be explained by the ineffectiveness of the UK corporate governance devices (Wahab and Holland, 2012). Consistent with Wahab and Holland (2012), Yee et al. (2018) did not find any evidence of the role of CG on the relationship between CTA and firm value in Malaysia. Regardless of CG, the effect of CTA on firm value is negative and significant. This result indicates that CTA does not enhance firm value because of the trade-off between tax benefits and potential managerial rent diversion. Measuring the CG by the final score of each firm from the top 100 listed firms of good disclosure in the Malaysia-ASEAN CG report 2014, they find that the effect of CTA on valuation is still negative and significant even though the presence of CG is expected to protect the stockholders' benefits. To investigate further the role of CG on the relationship between CTA and firm value, they divide the 100 firms into two sub-samples, with well-governed firms ranked from 1 to 50 and poorly-governed firms ranked from 51 to 100. They find that the coefficients of CTA and firm value in both sub-samples is negative but insignificant. The results indicate that the governance mechanism does not have any effect on the valuation implication of CTA. Yee et al. (2018) explain that governance mechanisms are ineffective in Malaysia and the asymmetric information between stockholders and managers leads to a weak control mechanism. In addition, they underline that CTA may cause a profound loss in the firm's reputation in this digital era and thus lead to incredulity among stockholders of the value-enhancement from CTA.

Focusing on the BoD as an attribute of the governance mechanism, Li et al. (2017) find evidence about the relationship between CG and the valuation implication of CTA worldwide. They find that the positive relationship between CTA and firm value is insignificant, but the interaction coefficient

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[26] CTA is measured by tax shelter (Wilson, 2009), discretionary book tax difference (Desai & Dharmapala, 2006), or total book tax difference (Frank et al., 2009).

[27] Using E- and G- index and the dual class share structure as attributes of corporate governance, weak governance is code one for firms in the top quintile of the entrenchment (4 or greater) or governance (12 or greater) indexes or with a dual class share structure , otherwise zero.

between board reforms and CTA is significantly positive. In other words, the positive effect of CTA on valuation becomes significant after board reforms focusing on improving the independence of the BoD. This result supports the argument that the BoD could align agency conflicts between stockholders and managers by controlling managerial rent extraction from CTA and thus motivate value-enhancing CTA. In addition, Lestari and Wardhani (2015) examined the moderating role of board diversity on the valuation of CTA based on Wahab & Holland (2012) in a sample of 443 listed firms on the Indonesia stock exchange (IDX) from 2010-2011. They find a significant, positive effect of CTA on valuation and this positive effect is robust to controlling for board diversity. Lestari and Wardhani (2015) find that the percentage of directors on the BoD in the 40 to 50-year-old age band and the percentage of directors on the BoD having a background in economics and business positively, significantly affect the relationship between CTA and firm value. Meanwhile, the percentage of directors of Chinese ethnicity has a significant, negative effect on the valuation implication of CTA. These results indicate that the BoD could play a moderating role in the relationship between CTA and valuation. Regarding gender diversity, *ev*idence in Bhagiawan and Mukhlasin (2020) shows that female directors mitigate the positive effect of CTA on firm value in Indonesian manufacturing listed firms from 2016-2018.

There is little evidence of the effect of the BoD on the CTA-firm value relationship. Based on the effect of four common attributes of the BoD on CTA and the effect of CTA on firm value discussed in sections (2.2) and (2.3), the board size, board independence, female representation and CEO duality are expected to affect the relationship between CTA and firm value.

First, based on Vo and Phan (2013), I expect a smaller board could represent a better monitoring mechanism in dealing with agency conflicts in making tax planning decisions (see section (2.2). I also expect that investors place a premium on CTA in Vietnamese non-financial listed firms. Thus, I hypothesize the following relationship:

Hypothesis 3A: Board size impacts negatively on the relationship between CTA and the value of Vietnam non-financial listed firms.

Second, based on Vo and Nguyen's (2014) study, independent directors on the BoD are expected to address agency conflicts and improve firm performance and firm value. I thus hypothesise the following relationship:

Hypothesis 3B: Board independence impacts positively on the relationship between CTA and firm value of Vietnam non-financial listed firms.

Third, under the agency perspective, female members are expected to enhance the effectiveness of the BoD and positively affect firm performance via value-enhancing activities. Thus, I hypothesise the following relationship:

Table 2. 3   Selected studies on the effect of corporate governance on the relationship between CTA and firm value

Author(s)	Research sample	Research periods	Regression method(s)	Hypothesised Sign
Desai & Dharmapala (2009)	862 US firms	1993-2001	OLS, IVs	The positive effect of CTA on firm value is only significant in firms with institutional ownership over 0.6
Wilson (2009)	33 US firms	1990-2007	OLS	Tax shelter firms with corporate governance scores above the sample's median have better firm performance
Ayer et al. (2011)	5,977 US firms	1987-2010	FE	The joint effect between CG and CTA on firm value is negative and significant.
Wahab & Holland (2012)	196 listed firms on LSE	2005-2007	RE, FE, OLS	The joint effect of CTA and CG is insignificant.
Li et al. (2017)	29 countries	1990 to 2012	FE, OLS	Board's independence intensifies the positive effect of CTA on firm value.
Lestari & Wardhani (2015)	443 listed firms on the Indonesia stock exchange	2010-2011	FE	Mid-aged directors and directors with a background in economics can intensity the positive effect of CTA on firm value
Bhagiawan & Mukhlasin (2020)	Manufacturing listed firm on the Indonesia stock exchange	2016-2018	OLS	Female directors mitigate the positive effect of CTA on firm value.

Source: Author's compilation

Hypothesis 3C: Female directors on the BoD positively affect the relationship between CTA and firm value of Vietnam non-financial listed firms.

Finally, a CEO who is also the Chair of the BoD has more motivation to avoid taxes because of the rent extraction of CTA. However, CEO duality can lead to weak governance and scepticism from stockholders about rent extraction from CTA and, hence, investors no longer place a value premium on firms with a high level of CTA. Thus, I hypothesise the following relationship:

Hypothesis 3D: CEO duality negatively affects the relationship between CTA and firm value of Vietnam non-financial listed firms.

2.5   Research framework

The research framework for my study is preszented in Figure 2.1. First, CTA is affected by the BoD, firm financial characteristics and ownership structure. Four common attributes of the BoD (board size, board independence, female representation and CEO duality) are used in the study.
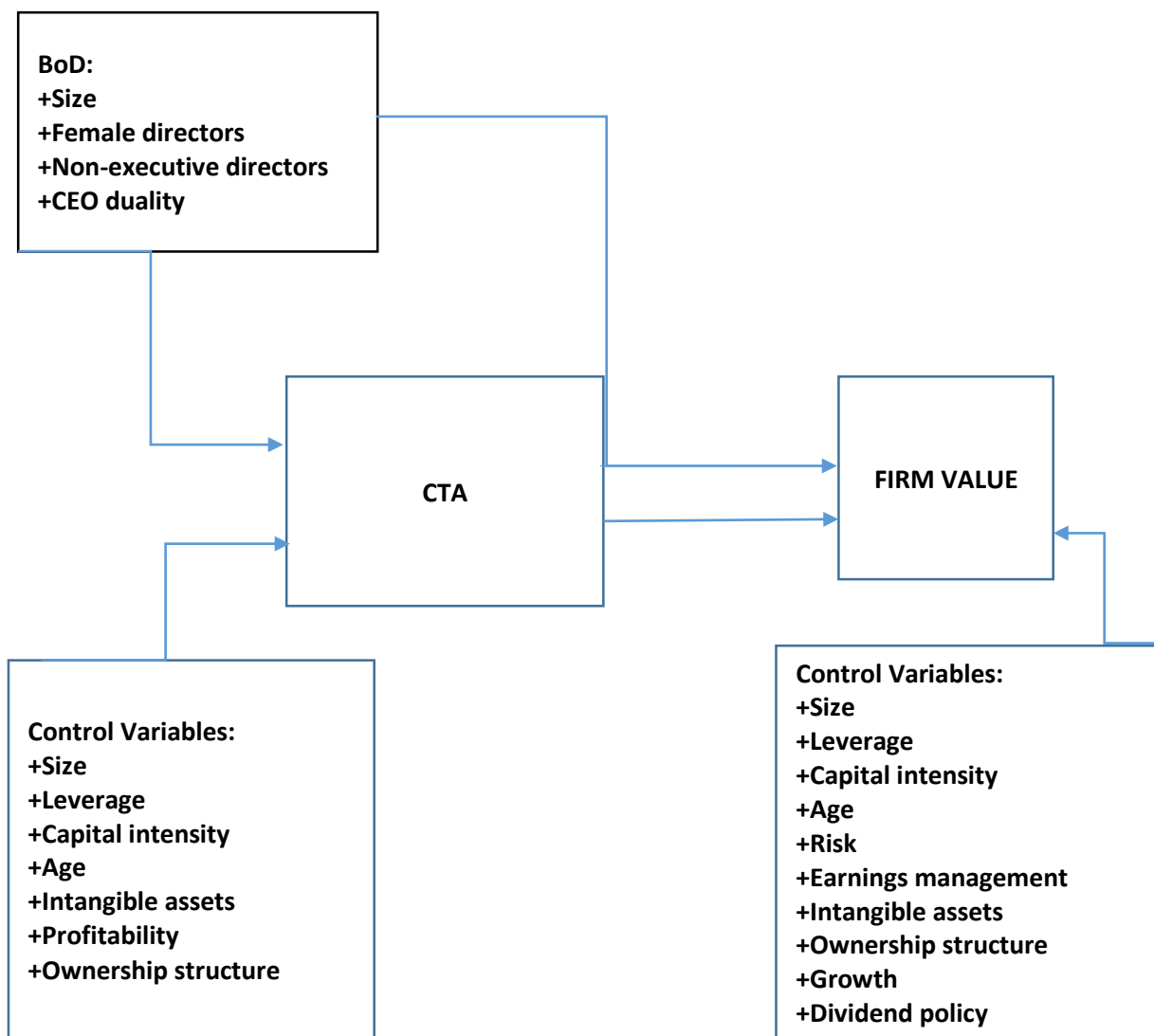
Figure 2.1   The research framework to examine the relationship between the BoD, CTA and firm value

Second, I examine the effect of CTA on firm value. I control for other factors influencing firm value including firms' financial characteristics, ownership structure and earnings management. Finally, I investigate the joint effect of the BoD's attributes and CTA on firm value.

2.6   Chapter summary

This chapter reviewed both theoretical and empirical studies about the relationship between the BoD, CTA and firm value. Section (2.1) discusses the agency perspective of CTA. According to Chen and Chu (2005), CTA is much more sophisticated than individual tax avoidance and is related closely to agency theory because it involves the strategic behaviour of both stockholders and managers. Managers can seek rent extraction from CTA because of the opacity and complexity of tax transactions. However, explaining tax avoidance behaviour among firms as well as the effects of CG on CTA under agency theory is still debatable.

Section (2.2) provides an overview of the relationship between the BoD and CTA. The effective BoD that monitors management and protects stockholders' interests might either choose to increase tax avoidance practices to improve bottom-line performance (Minnick and Noga, 2010) or decrease tax avoidance activities to further legitimise their existence because of the negative effects of CTA on society (Lanis & Richardson, 2011). Since evidence from prior research shows mixed results of the effect of the BoD's attributes on CTA, further investigation is needed to investigate how the BoD affects CTA, especially in a developing country like Vietnam.

Section (2.3) gives an overview of the effect of CTA on firm value. Firms can engage in CTA to reduce substantial expenses from income tax and increase the cash available for reinvestment and growth (Chung et al., 2015). However, an increase in the after-tax value of the firm from avoiding taxes may be offset by a decrease in firm value because of rent extraction associated with CTA. We hypothesize that investors' place a premium on firm value in Vietnamese non-financial listed firms because the combination between a lack of strict law and the bribes between firms and tax authorities can reduce the costs of CTA such as fines or reputation costs.

Section (2.4) provides an overview of the effect of the BoD on the CTA-firm value relationship. Prior research provides evidence that governance mechanisms can be a moderating factor influencing the valuation of CTA. We hypothesize that the effectiveness of the BoD in addressing the agency conflict in tax planning strategy can enhance firm value.

Section (2.5) provides the research framework on the relationship between the BoD, CTA and firm value.

Chapter 3

Data and Research Methodology

Chapter 3 presents the data and research methodology. Section 3.1 defines the variables used in the study. Section 3.2 presents the model specification and estimation methods used in the study. Section 3.3 describes the data collection.

3.1 Variable definitions

3.1.1 Tax avoidance

CTA is usually inferred from firms' financial statements because details of a firm's tax avoidance schemes are not available and published (De Simone et al., 2016). Based on firms' financial statements, the two most common measures of CTA are the ETR and the book-tax difference (BTD). This study uses BTD to measure CTA. BTD captures the total differences between pre-tax income and taxable income, including temporary and permanent differences. Whether managers manipulate earnings upward or not, they are able to report taxable income at a lower amount that leads to a higher BTD. A high BTD implies the existence of tax avoidance practices (Kim et al., 2011). Because of the absence of tax data, taxable income is estimated by dividing current tax expenses by the statutory tax rate. Following Frank et al. (2009), the BTD is defined as:

$$BTD_{it} = \frac{PI_{it} - \left(\frac{Current\_tax_{it}}{Tax\_rate_{it}} \right)}{Assets_{it-1}} \tag{3.1}$$

where: $BTD_{i,t}$, $PI_{i,t}$, $Current\_tax_{i,t}$, and $Tax\_rate_{i,t}$ are the book-tax difference, pre-tax income, current tax expenses and the statutory tax rate of firm i in year t, respectively; $TA_{i,t-1}$ is the total assets of firm i in the previous year. The higher the BTD, the higher the level of CTA a firm uses.

This study also uses the permanent BTD (hereafter, PBTD) and discretionary total BTD (hereafter DBTD) as alternative proxies of BTD for robustness check. First, PBTD takes BTD a step further by excluding the temporary proportion of BTD. According to Wang (2010), the PBTD is defined as :

$$PBTD_{it} = \frac{PI_{it} - \left(\frac{Current\_tax_{it}}{Tax\_rate_{it}} \right) - \left(\frac{Deferred\_tax_{it}}{Tax\_rate_{it}} \right)}{Assets_{it-1}} \tag{3.2}$$

where: PBTD_{it}, Current_tax _{it}, Deferred_tax _{it}, Tax_rate _{it}, are the permanent book-tax difference, pre-tax income, current tax expenses, deferred tax expenses and the statutory tax rate of firm i in year t, respectively. Assets _{it-1} is the total assets of firm i in the previous year. The higher the PBTD, the higher the level of CTA a firm employs.

Second, DBTD could be seen as an alternative proxy for CTA as the effect of earnings management on BTD is isolated (Desai & Dharmapala, 2006). The DBTD is extracted from the residual in equation (3.3):

$$BTD_{it} = \beta_0 + \beta_1 ACC_{it} + \varepsilon_{it} \qquad (3.3)$$

where: BTD_{it} is the book-tax difference of firm i at year t, and ACC_{it} is the total accrual of firm i at year t. The higher DBTD, the higher the CTA a firm employs.

The ETR represents the proportion of taxes and business income and, hence, a firm with a lower ETR is likely to engage in more tax avoidance. However, according to Guenther (2014), the measurement of ETR encounters several limitations. First, ETR faces the potential mismatch of conforming tax avoidance and non-conforming tax avoidance[28]. For example, a firm with $1000 of pre-tax income and $100 of potential income tax, but the incurred income tax expense in the period is $80. If this firm does not manipulate pre-tax income, the ETR (8%) is lower (higher) than that of firms reporting the lower (higher) pre-tax income. Thus, ETR cannot reflect the level of CTA in cases that firms manipulate both their taxable income and accounting income. Second, if ETR is computed by the ratio of tax payments and pre-tax income, it faces a potential mismatch of the numerator and denominator because of the cash taxes paid on the current periods, which could include tax payments of former periods (Guenther, 2014). The accrual effects are still present in the numerator even for the long run cash ETR, the ratio of the sum of cash taxes paid over the years to the sum of pre-tax income over the same period. Finally, ETR faces the risk of data truncation bias (Guenther, 2014). ETR is truncated from zero to one; negative pre-tax income observations are excluded. Henry and Sangsing (2014) suggest a new measurement of ETR to include negative pre-tax income observations by using the market value of assets instead of pre-tax income. However, it is difficult to interpret their ratio.

Despite the limitation of ETR, two common measurements of ETR in prior research are used in this study, the accounting effective tax rate (AETR) and current effective tax rate (CETR) as alternative proxies of CTA for the robustness check (Chen et al., 2010; Huang et al., 2016). The AETR is defined as:

$$AETR_{it} = \frac{TI_{it}}{PI_{it}} \qquad (3.4)$$

where: $AETR_{it}$ is the accounting effective tax rate of a firm i at the end of year t; TI_{it} is the total income tax expenses of firm i at the end of year t; PI_{it} is the pre-tax income of firm i at the end of year t. The higher the AETR, the lower the level of CTA a firm employs.

Additionally, CETR is used to take into account deferred tax expenses. The CETR is defined as:

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[28] Non-conforming tax avoidance refers to cases in which income tax liabilities are reduced but not book income. Both book and taxable incomes are, however, reduced in conforming tax avoidance (Badertscher et al., 2019).

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$$CETR_{it} = \frac{TI_{it} - DT_{it}}{PI_{it}}$$ (3.5)

where: $CETR_{it}$ is the current effective tax rate of firm i at the end of year t; TI_{it} is the total income tax expenses of firm i at the end of year t; DT_{it} is the deferred tax expenses of firm i at the end of year t; and PI_{it} is the pre-tax income of firm i at the end of year t. The higher the CETR, the lower the level of CTA a firm employs.

3.1.2 Board of Directors

Based on previous studies, we consider four common attributes of the BoD: the size of the BoD, the independence of the BoD, female representation on the Board, and CEO duality.

Board size

Board size could affect the effectiveness of the BoD in monitoring managers and hence affect firm performance and other firm policy decisions such as the tax planning strategy. There is some empirical evidence of the negative relationship between board size and firm value because of coordination problems in large BoD (Mak & Kusnadi, 2005; Cheng et al., 2008; Guest, 2009). However, Kiel and Nicholson (2003) and Adams and Mehran (2005) argue that members of a large BoD are more likely to provide more experience and skills than in a small BoD. Thus, board size may positively affect firm value. In terms of CTA, Wahab and Holland (2012) argue that board size can positively or negatively affect CTA. Firms with an optimum size BoD (large board or small board) provide better monitoring and hence could use more value-enhancing tax avoidance activities or less optimistic tax avoidance activities (see Minnick & Noga, 2010; Zemzem & Ftouhi, 2013; Ribeiro, 2015; Păunescu et al., 2016).

In this study, the size of the BoD (denoted as BSIZE) is measured by the total number of members on the BoD at the end of each year.

Board independence

Clifford and Evans (1997) argue that the BoD's independence is a key factor in the effectiveness of the BoD in monitoring management performance. The presence of non-executive directors (NED) on the BoD is a requirement of corporate governance codes across countries (Young, 2000). According to Pass (2004), NED who could exercise independent judgment is seen as a "buffer" between executive directors and outside stockholders. In line with Pass (2004), Ribeiro (2015) argues that the presence of NED contributes to the independence of the BoD and provides better monitoring that could mitigate agency conflicts between managers and stockholders in terms of CTA. There are mixed results on the relationship between board independence and CTA in prior research. In line with Minnick and Noga (2010), Khaoula and Ali (2012) and Mulyadi et al. (2014) find that firms with a higher percentage of independent members on the BoD are more likely to engage in tax avoidance practice to improve their bottom–line performance. However, other studies show the opposing result implying that rent

diversion from tax avoidance activities is deterred if the BoD has more independent members (see Richardson & Lannis, 2011; Sunarsih & Oktaviani, 2016).

The number of non-executive members of the BoD (denoted as NED) as a proxy for board independence is used in this study. According to the current regulation of corporate governance in Vietnam (Decree 71/2017/ND-CP), non-executive members of the BoD do not hold any of the following positions: CEO, deputy CEO, chief accountant or any other executive manager.

Board gender diversity

Adams and Ferreira (2009) argue that the effect of the female members on the BoD is similar to the effect of the independent members on the BoD suggested in governance theory. Women are more risk-averse than men in making the decisions (Jianakoplos & Bernasek, 1998) and are willing to comply with tax regulations (Mason & Calvin, 1978; Orviska & Hudson, 2003). Based on the differences between male and female directors, the presence of a female on the BoD has a positive effect on the effectiveness of the BoD in monitoring agency conflicts between shareholders and managers in the tax planning strategy. Several empirical studies show that the presence of a female on the BoD could decrease the level of optimistic CTA to control rent extraction arising from tax avoidance activities (Zemzem & Ftouhi, 2013; Richardson et al., 2016). However, Khaoula and Ali (2012) do not find any significant relationship between gender diversity on the BoD and CTA in a sample of 300 large US firms from 1996-2009. The authors' result can be explained by the negligible proportion of females on the BoD. Streefland (2016) suggests the positive relationship between female representation on the BoD and CTA if CTA is seen as enhancing value activities.

The number of female members of the BoD (denoted as FEMALE) is used as a proxy for gender diversity of the BoD and hypothesize that female representation on the Bod affects CTA significantly.

CEO duality

CEO duality refers to the situation where the CEO is also the Chair of the BoD, which could affect agency conflicts relating to CTA. Jensen (1993) suggests that separation of the Chair of the BoD could contribute to an effective monitoring mechanism over management performance. If the CEO is also the Chair of the BoD, he or she cannot separate his or her personal benefit from the shareholders' interests when monitoring the board. In terms of CTA, Wahab et al. (2017) suggest that CEO duality leads to weak governance and increase managerial rent extraction from optimistic CTA.

A dummy variable for the CEO duality (denoted as DUA) is used in this study. DUA equals one if the CEO is also the Chair of the Board, otherwise zero.

3.1.3 Firm Value

Following Desai and Dharmapala (2009), Tobin's q is used as a proxy for firm value because of its advantages, such as reflecting both market and accounting information and minimising issues related to stock returns (Wernerfelt & Montgomery, 1988). A higher value of Tobin's q leads to a higher firm value. Tobin's q is defined as:

$$Q_{it} = \frac{(L_{it} + PE_{it} + MI_{it}) + MV_{it}}{TA_{it}} \qquad (3.6)$$

where: Q_{it} is Tobin's q of firm i year t; MV_{it}, L_{it}, TA_{it}, PE_{it}, and MI_{it} are the total market value of equity, the total liabilities, the total assets, preferred equity, and the minority interest of firm i year t, respectively.

Based on Desai and Dharmapala (2009), the market value of equity scaled by lagged total assets is used as a proxy for Tobin's q to check the robustness of our regression results.

3.1.4. Other variables influencing CTA

To reduce potential bias from omitted variables, empirical models also control for selected firm characteristic variables influencing CTA: firm size, profitability, capital intensity and leverage.

Firm size

According to Gupta and Newberry (1997), the literature shows different results on the impact of firm size on CTA because of varying sample selection, study period and measurement of the variables. Richardson and Lannis (2007) show that firm size has a significant, positive effect on CTA in a sample of 92 non-financial firms listed in Australia from 1997-2003. The authors find that the negative coefficient of firm size measured by the natural logarithm of total assets is significant at 0.01 level if CTA is measured by the ratio of income tax expense to pre-tax income, and at 0.1 level if CTA is measured by the ratio of income tax expense to operating cash flows. This is consistent with evidence from Dyreng et al. (2008) in a sample of US firms from 1995-2004. The authors find a negative coefficient of firm size (log of average total assets) is significant at 0.01 level if CTA is measured by both long–term and short-term cash ETR. The positive relationship between firm size and CTA can be explained by the political power theory that larger firms have substantial resources to manipulate the political relationship in their favour. Thus, larger firms have more opportunities to avoid taxes (Ribeiro, 2015)

In contrast, a negative relationship between CTA and firm size is found in prior research (Wang, 2011; Huang et al., 2016). Using a panel of S&P 1500 firms from 1994-2001, Wang (2011) finds that firm size (the natural log of total assets) has a significant, negative effect on CTA measured by both Cash ETR and BTD. Evidence from Huang et al. (2016) in a sample of US firms from 1998-2011 is consistent with

Wang (2011). They find that both the positive effect of firm size measured by a firm's market value of equity on cash ETR and the negative effect of firm size on BTD is significant at 0.01 level. These results indicate that a smaller firm engages in less tax avoidance. This negative relationship is explained by the political cost theory where large firms are characterised by higher visibility leading to greater regulatory activities, leading to a lower level of CTA.

In Vietnam, Ha and Phan (2017) find mixed results of the relationship between firm size measured by the total assets and CTA in a sample of non-financial listed firms from 2009-2015. The authors find a positive coefficient of firm size is significant at 0.01 level if CTA is measured by the ratio of the total corporate income tax to cash flows and the ratio of current corporate income tax to cash flows. However, the coefficient is not significant if CTA is measured by the ratio of the total corporate income tax to the pre-tax income and the ratio of current corporate income tax to the pre-tax income.

In this study, firm size is measured by the logarithm of total assets at the end of year t (denoted as SIZE). Following the literature, firm size is hypothesised to positively affect CTA.

Firm age

Under political cost theory, older firms operating for many years can broaden their business and reduce their reputation cost (Scott, 2003). Firms tend to choose actions that do not trigger higher risk such as tax avoidance activities. In line with Scott (2003), Pratama (2017) finds a positive relationship between firm age and EFTs in a sample of Indonesian listed firms from 2011-2015. The result indicates that older firms are less likely to engage in tax avoidance activities.

Based on the literature, firm age (denoted as AGE) is measured by the number of years since establishment. Firm age is hypothesised to affect CTA negatively.

Profitability

Kraft (2014) argues that profitable firms might have a strong incentive to reduce their taxes as they transfer their profit from a high tax sector or area via tax deductions, exemptions and credits. Using a panel of 487 German non-financial firms from 2005 to 2010, they find the negative effect of return on assets (ROA) on ETR is significant at the 10% level. Supporting Kraft (2014), Ha and Phan (2017) find a significant, positive relationship between ROA and CTA measured by ETR in a sample of Vietnam non–financial listed firms from 2009-2015. In contrast, Ribeiro (2015) argues that the negative relationship between profitability and CTA can be explained by firms with higher earnings paying more taxes than their lower-earning counterparts. Using a sample of 704 non-financial firms listed on the LSE from 2010-2013, they find a significant, positive effect of profitability measured by ROA on ETR. This result is consistent with evidence from Minnick and Noga (2010). Using the panel of 2005 S&P 500 firms from 1996-2005, they find the positive coefficient of ROA is significant at the 5% level in five proxies of ETR.

I use ROA as a proxy for profitability. Consistent with Ha and Phan (2017), ROA is hypothesised to affect CTA positively.

Leverage

Kraft (2014) finds a positive relationship between firm leverage and CTA in a sample of German non-financial firms. The negative effect of leverage measured by long term debt scaled by the market value of equity on EFTs is significant at the 5% level. The authors explain that firms with a high level of leverage align agency conflicts between managers and stockholders better than their counterparts via debt agreements. With the presence of lenders, firms invest more efficiently and hence can increase tax savings via tax avoidance activities. Evidence from Ribeiro (2015) shows that the negative coefficient of leverage is significant at the 1% level if CTA is measured by the ratio of tax expenses to operating cash flows in a sample of UK firms. The author's result supports the argument that firms that rely more on debt (higher level of leverage) have a strong motivation to avoid taxes as they hold more cash for precautionary reserves and solvency. Consistent with Kraft (2014) and Ribeiro (2015), Ha and Phan (2017) find that firms with higher leverage exploit more CTA in Vietnam non–financial listed firms. In contrast, Wang (2010) finds a negative relationship between leverage and CTA measured by AETR and PBTD in a sample of S&P 500 firms. The result can be explained by firms relying on the debt tax advantage from the tax shield of interest expenses and, hence, the motivation to avoid tax is deferred.

Based on prior research, leverage is measured by long-term debt divided by lagged TA (denoted as LEV) in this study. LEV is hypothesised to affect CTA positively.

Capital intensity

According to Wang (2011), firms with a high level of capital intensity can generate more opportunities for dodging taxes via accelerated depreciation and strategically locating assets. However, Wang finds that the negative effect of the capital intensity measured by property, plant and equipment on CTA measured by ETR is significant at 0.05 level. However, the coefficient of capital intensity is insignificant if PBTD is the indicator of CTA. In line with Wang (2011), Huang et al. (2016) show that capital-intensive firms engage in more tax avoidance activities in a sample of S&P 500 firms. The negative effect of capital intensity on ETR is significant at 0.01 level. Using the ratio of net property, plant and equipment to total assets lagged as an indicator of capital intensity, Ribeiro (2015) finds a significant, positive impact of capital intensity on the tax avoidance level of firms listed on the LSE from 2010-2013. The authors explain that capital–intensive firms can take advantage of temporary book differences from different depreciation methods.

Following Ribeiro (2015), capital intensity is measured by the net property, plant and equipment scaled by lagged of total assets (denoted as PPE) in this study and is hypothesised to affect CTA positively.

Intangible assets

The literature documents evidence of a relationship between intangible assets and CTA. De Simone et al. (2016) argue that firms with more intangible assets have more motivation and opportunities to shift income from high-tax areas to low-tax areas, resulting in a higher level of tax avoidance. Additionally, Dyreng, Hanlon and Maydew (2019) suggest that firms with more intangible assets can also avoid taxes by qualifying for tax credits via research and development (R&D) investment. However, they show that CTA relating to intangible assets comes with cost and uncertainty.

Based on prior research, intangible assets (denoted as INTANG) measured by intangible assets scaled by lagged total assets are hypothesised to affect CTA positively.

Ownership structure

Desai and Drahamapala (2006) argue that strong governance mechanisms are expected to reduce rent extraction and, consequently, limit tax avoidance activities. Consistent with Desai and Dharmapala (2006), Lanis and Richardson (2011) agree that agency theory could explain CTA in cases where CTA and rent extraction are complementary. However, in other situations, the negative relationship between corporate governance and CTA can be applied by stakeholder and legitimacy theory. Firms with better governance mechanisms should reduce the level of CTA to further legitimize their existence because of the negative effects of CTA on society. However, Khan et al. (2017) argue that well-governed firms have a higher level of CTA so long as tax avoidance is one strategy used by managers to improve after-tax performance.

The prior research shows empirical evidence of the effect of ownership structure as one internal governance mechanism on CTA (Yoo & Koh, 2014; Salihu et al., 2015; Ha & Phan, 2017; Khan et al, 2017; Shi et al., 2020). In particular, Salihu et al. (2015) show a positive relationship between foreign ownership and CTA is because of better performance in a sample of listed firms on the FTSE Bursa Malaysia Top 100 Index from 2009-2011. Evidence in Khan et al. (2017) also shows a positive effect of institutional ownership on CTA in a sample of US-listed firms from 1979–2006. Yoo and Koh (2014) show that foreign investors place more emphasis on legitimate and social responsibility than they do on the benefits of CTA among 670 listed firms on the Korea Stock Exchange.

Regarding state ownership, privatization in Vietnam has progressed slowly because of the fear of losing control of authority and asset valuation issues (Tran et al., 2015). Thus, state ownership remains dominant, especially in some core sectors. Using a sample of 460 Vietnam listed firms from 2009-2015, Ha and Phan (2017) find a negative relationship between state ownership and CTA. They argue that firms with higher state ownership are directed to social and political targets to promote economic growth.

Following the prior research, institutional ownership (INST), foreign ownership (FOREIGN) and state ownership (STATE) are included in regression models to control for the effects of ownership structure on CTA. The effects of INST, FOREIGN and STATE on CTA are hypothesised to be negative.

3.1.5 Other variables influencing firm value

To deter potential bias from omitted variables, I control for other selected firm characteristics variables such as firm value, firm age, sales growth, firm risk, earnings management, firm size, leverage, capital intensity and dividend. I also control for ownership structure as another governance mechanism influencing firm value.

Firm age

According to Coad et al. (2016), firm age can affect performance positively via routinization and reputation. The authors argue that older firms experience more changes and become more routinized than young firms. Firms that operate for many years can obtain benefits from accumulated resources, managerial ability and market position. However, the authors also find that the innovation effort and its effect on firm growth are more stable in mature firms in a sample of Spanish firms from 2004-2012. Their result indicates that mature firms suffer inertia issues that constrain the firms' flexibility to change and gain higher growth rates. Evidence in Wang (2011) shows that firm age affects firm value negatively in a sample of S&P1500 firms from 1994-2001. This result is consistent with Black et al.'s (2014) one that mature firms have a lower level of intangible assets and growth than younger firms.

Based on the literature and as mentioned in 3.1.4, firm age is measured by the number of years since establishment and hypothesised to affect firm value negatively.

Sales growth

Rao (2014) argues that a high growth rate in the past could be a clue to higher growth prospects in the future and hence could enhance firm value. In line with Rao (2014), Maury and Pajuste (2005) find a positive effect of sale growth as a proxy for growth opportunities on Tobin's q in a sample of 136 Finnish listed nonfinancial firms from 1993-2000. The result indicates that firms with more growth opportunities can result in a higher valuation. Chi (2005) also finds a positive relationship between sales growth and Tobin's q in a sample of US firms from 1993-2002.

Based on Maury and Pajuste (2005), annual sales growth (denoted as GROWTH) is used as a proxy for growth opportunities and hypothesised to affect firm value positively.

Firm risk

Firms with greater volatility are more likely to experience more growth opportunities than their less volatile counterparts. Thus firm risk could enhance firm value decomposing into the value of assets and the value of growth opportunities (Shin & Stulz, 2000). Chen et al. (1985) suggest a testable model

of the relationship between firm risk and firm value based on Subrahmanyam and Thomadakis (1980). The authors show that beta and systematic risk negatively affect market power measured by Tobin's q. In line with Subrahmanyam and Thomadakis's (1980) study, Shin and Stulz (2000) argue that the relationship between firm value and firm risk could be negative because of the trade-off between the cost of financial distress and equity volatility for a given level of debt. A firm could choose the optimal option with lower equity volatility and higher leverage to take advantage of a tax shield. Furthermore, the higher volatility of equity could lead to a decrease in firms' expected cash flows and hence affect firm value negatively.

Based on Hoang et al. (2017), systematic risk (denoted as RISK) is used to control for the potential effect of firm risk on firm value and hypothesised to affect fim value negatively.

Earnings management

Earnings management (EM) is defined as a strategy whereby firms' financial statements and earnings are manipulated via accounting techniques to match a predetermined target (Healy & Wahlen, 1999). EM relates closely to the manager behaviour. Under the agency theory, EM is viewed as an opportunistic activity that managers use to maximise their benefit, such as compensation, rather than stockholders' wealth. For example, Baker et al. (2003) find that managers manipulate financial reporting to maximise their option compensation and bonus pay in a sample of 168 US firms from 1992-1998. Thus, opportunistic EM could affect firm value negatively. Tangjitprom (2013) finds a negative relationship between EM and firm value in a sample of US firms from 2002-2010.

In contrast, Subramanyam (1996) argues that opportunistic EM could enhance firm value in an inefficient market. The author also argues that EM measured by discretionary accruals could be reflected in the stock market prices by adding earnings information. In line with Subramanyam (1996), Jiraporn et al. (2008) show that EM is not an expropriation activity that could be detrimental to a firm's value. They find a positive effect of EM on a firm's value in a sample of US firms in 1993, 1995 and 1998.

Based on Wang (2011) and Dechow et al. (1995), I use discretionary accruals as a proxy for EM. Specifically, I estimate equation (3.7) and use the parameters estimated in equation (3.8) to obtain firm-level discretionary accruals scaled by lagged total assets.

$$ACC_{it} = \beta_0 (1/ TA_{it-1}) + \beta_1 DSales_{it} + \beta_2 GPPE_{it} + \mathcal{E}_{it} \tag{3.7}$$

where: ACC is total accruals scaled by lagged total assets; TA is the total assets of firm i in year t; and DSale and GPPE are the change in sales and gross property, plant and equipment scaled by lagged total assets of firm i in year t, respectively.

$$DIS\_ACC_{it} = ACC_{it} - \{\beta_0 (1/ TA_{it-1}) + \beta_1 (DSales_{it} - DReceivables_{it}) + \beta_2 GPPE_{it} \tag{3.8}$$

where: DIS_ACC is discretionary accruals of firm i year t; DReceivables is the change in receivables of firm i year t; and ACC, TA, DSale and GPPE are defined as above.

Earnings management is hypothesised to affect firm value positively.

Firm size

Firm size is measured as the number of employees, total sales or total assets. The potential positive relationship between firm size and firm value can be explained by competitive power and financial flexibility. Stierwald (2009) argues that large firms have more competitive power and privileged monopoly profit than small firms because of their generous resources and a bigger market share. Antoniou, Guney and Paudyal (2008) suggest that large firms can access loans easily because of the lower bankruptcy risk and more transparency. As a result, they can obtain investment opportunities to increase their profitability and valuation. In line with Stierwald (2009) and Antoniou et al. (2008), Desai and Dharmapala (2009) find a positive relationship between firm size measured by total sales and firm value measured by Tobin's q in a sample of US firms from 1993-2001. The coefficient of firm size is positive and significant at the 1% level. Evidence from Connolly and Hirschey (2005) shows that firm size has a positive effect on the firm value measured by Tobin's q via its fundamental determinants in a sample of US firms from 1997-2001. In particular, firm size measured by the book value of total assets intensifies the relationship between profit margin, growth and R&D expenditure.

Based on the literature, firm size is hypothesised to have a positive effect on firm value.

Leverage

Jensen (1986) argues that firms with higher leverage can reduce agency conflict between managers and shareholders because managers rent diversion is restricted by limiting free cash flows and monitoring debt holders over managers. However, Fama and French (1998) argue that leverage could result in potential financial distress costs and, hence, lower a firm's value by lowering expected profits. With asymmetric information from issuing debt and equity, firms prefer internal financing because external financing can be seen as bad news about earnings. Myers (1977) suggests that leverage can result in risky investments or underinvestment because of the distribution of benefits between debtholders and stockholders. In line with Fama and French (1998) and Myers (1977), Wang (2011) finds that leverage affects firm value negatively in a sample of S&P 1500 firms from 1994-2001.

Based on the literature, leverage is hypothesised to affect firm value positively.

Capital intensity

Capital intensity as a proxy for investment opportunities is expected to have a positive effect on firm value. According to Lubatkin and Chatterjee (1994), capital intensity reduces firms' risk as the already committed costs for property, plant and equipment can help reduce additional costs. However,

Allayannis and Weston (2001) argue that firms still have higher Tobin's q ratio from efficient projects (positive net present value) when other investment opportunities are not captured because of the lack of financial resources and a high level of capital intensity. In line with Allayannis and Weston (2001), Love and Klapper (2002) find a significant, negative effect of capital intensity on firm value measured by Tobin's q in a sample of 374 firms in 14 emerging markets. Lee (2014) also finds a negative relationship between capital intensity on firm value in a sample of firms in hospitality in the US from 2000-2008. The author explains that a higher level of capital intensity can increase a firm's risk because of higher volatility in profitability.

Based on Love and Klapper (2002), capital intensity is hypothesised to affect firm value negatively.

Dividend

According to Kanakriyah (2020), under the signal theory, dividends are seen as a signal about the corporation to external investors and shareholders about the prospects for profits and their successful performance. Using a sample of Japanese listed firms from 1982-1991, Kato et al. (2002) show that dividends reflect an organization's cash flow pattern and future earnings. However, according to Miller and Modigliani (1961), a firm's dividend policy is irrelevant to firm value and stock price. Likewise, Husna and Satria (2019) find a neutral relationship between dividend payout and firm value in a sample of 138 listed firms on the Indonesia Stock Exchange from 2013-2016.

In this study, based on previous research, dividend (denoted as DIV) is measured by the cash paid dividend divided by lagged of total assets and is hypothesised to affect CTA positively.

Ownership structure

The relationship between ownership structure and firm value can be explained by agency conflicts between insiders making a decision and outside stockholders (Jensen & Meckling, 1976). Prior research gives evidence of the relationship between ownership structure and firm value (McConnell & Servaes, 1990; Wei et al., 2005).

McConnell and Servaes (1990) show a positive effect of institutional ownership on firm value measured by Tobin's q in a sample of US-listed firms in 1976 and 1986. This result supports Pound (1988) that institutional investors have better monitoring over management and help them make good decisions for stockholders. However, institutional stockholders may be inactive or expropriate corporate resources for their interests at the expense of minority stockholders. Using a sample of Chinese listed firms from 1991-2001, Wei et al. (2005) find a negative effect of institutional ownership on firm value. They also find that a high level of state ownership might be a signal of partial privatization, which leads to higher agency conflicts and expropriation of public assets by insiders. The effect of foreign ownership, however, positively affects firm value. Foreign ownership can monitor management better

to serve the best interests of stockholders. The presence of foreign investors can also help firms access international capital markets better.

Following prior research institutional ownership, foreign ownership and state ownership is included in regression models to control for the effects of ownership structure on firm value. Institutional ownership and foreign ownership is hypothesised to affect firm value positively. The effect of state ownership on firm value is hypothesised as negative.

3.2 Empirical models and estimation methods

3.2.1 The relationship between the Board of Directors and corporate tax avoidance

To observe the effect of the BoD on CTA, based on Richardson et al. (2015) and Desai and Dharmapala (2006), the baseline model is:

$$\text{BTD}_{it} = \alpha_0 + \alpha_1 \text{NED}_{i,t} + \alpha_2 \text{FEMALE}_{it} + \alpha_3 \text{DUA}_{i,t} + \alpha_4 \text{BSIZE}_{i,t} + \alpha_5 ROA_{i,t} + \alpha_6 Control_{i,t} + Industry + Year + \varepsilon_{i,t} \tag{3.9}$$

where: $BTD_{i,t}$ is book-tax differences of firm i in year t; $NED_{i,t}$, $FEMALE_{i,t}$, $DUA_{i,t}$, and $BSIZE_{i,t}$ are the number of non-executive directors of the BoD, the number of female directors, CEO duality and the number of directors of the BoD of firm i in year t, respectively; $ROA_{i,t}$ is the return on assets of firm i in year t; and $Control_{i,t}$ is a vector of the control variables, including firm size (SIZE), financial leverage (LEV), fixed assets (PPE), intangible assets (INTANG), and firm age (AGE) (Rego, 2003, Chen et al., 2010; Ribeiro, 2015; Huang et al., 2016; Wahab et al.,2017). I control for the effect of internal governance on firm value by institution ownership (INST), state ownership (STATE) and foreign ownership (FOREIGN). Table 3.1 defines the baseline model (equation 3.9) variables.

Regarding estimation methods, pooled OLS regression has been used in prior research on tax avoidance studies (see Richarson& Lanis, 2011; Wang, 2011; Huang et al.,2016). Equation (3.9) is then re-written as follows.

$$Y_{it} = \alpha_{01} + \beta_{01} X_{it} + \varepsilon_{it} \quad (u_i = 0) \tag{3.10}$$

The OLS will be unbiased and consistent if the following assumptions are satisfied: (a) linear functions between the dependent variable and predictors and error terms exist; (b) the sample is random; (c) there is no exact correlation among the predictors; and (d) the expected value of the error terms is zero. If the individual effect (cross-sectional or time-specific effect) exists, unobserved firm characteristics may violate the assumptions (c) and (d). Thus, the OLS estimator no longer provides efficient and unbiased parameter estimates.

Table 3.1   Definitions of the variables for equation 3.9

Variable	Acronym	Definition
Tax avoidance		
The book-tax difference	BTD	Pre-tax accounting income – (Tax expense/ Tax rate) +Δ NOL
Board of directors		
Board size	BSIZE	The number of members on the BoD
Board independence	NED	The number of non-executive members on the BoD
Female representation	FEMALE	The number of female members on the BoD
CEO duality	DUA	A dummy variable equals one when the CEO is also Chairman of the Board, otherwise zero
Control variables for the effects of financial characteristics on CTA		
Firm profitability	ROA	Return on assets
Firm size	SIZ	Total asset at the end of the year
Leverage	LEV	Long-term debt divided by lagged TA
Capital intensive	PPE	PPE divided by lagged TA
Intangible assets	INTANG	Intangible assets divided by lagged TA
Firm age	AGE	The number of years that firms are established
Institutional ownership	INST	Percentage of shares held by institutions
State ownership	STATE	Percentage of state ownership
Foreign ownership	FOREIGN	Percentage of shares held by foreigners

On the one hand, if the individual effect is time-invariant and considered as a part of the intercept, it is allowed to be correlated with other repressors. Thus, fixed effect models are applied to examine the relationship between the variables. Equation (3.11) represents equation (3.9) as follows:

$$Y_{it} = (\alpha_{02} + u'_i) + \beta_{02} X_{it} + \varepsilon'_{it} \tag{3.11}$$

On the other hand, if the individual effect is not correlated with any regressor, then it is considered as a component of the composite error term. A random-effect model is estimated by generalized least squares (GLS) when a covariance structure of individual i, Σ (sigma), is known. Equation (3.12) represents equation (3.9) as follows:

$$Y_{it} = \alpha_{03} + \beta_{03} X_{it} + (u''_i + \varepsilon''_{it}) \tag{3.12}$$

Following Park (2011), we test for the existence of fixed/random effects in panel data using the F-test, Breusch and Pagan's Lagrange multiplier (BPLM) test and compare FE and RE by the Hausman specification test.
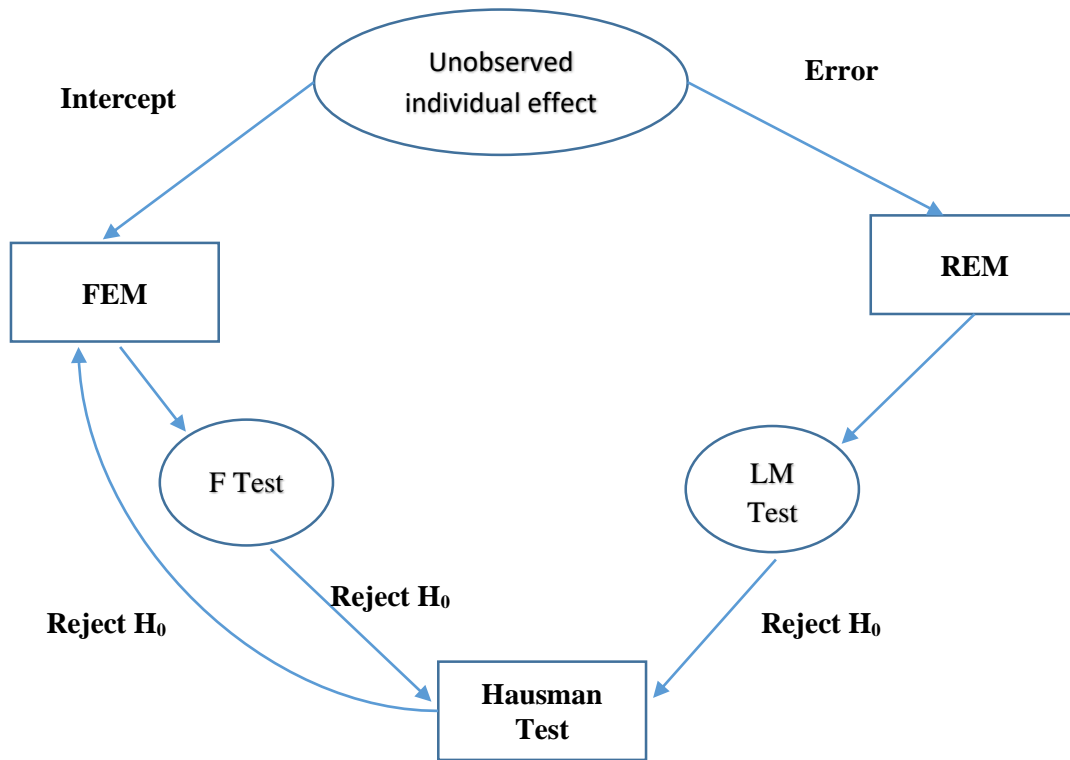
Figure 3.1   Panel data modelling selection (after Park, 2011)

First, fixed effects are tested by the F test. The F test compares the FE model and pooled OLS to find improvement in the goodness-of-fit of the FE model. In equation (3.11), the null hypothesis is the observed and unobserved fixed effects are equal to zero, i.e. they are equal across all units. The alternative hypothesis is that at least one dummy parameter is not zero. With a panel of n firms, T years and k regressors (excluding the intercept term), the F test based on loss of goodness-of-fit is given as:

$$F(n-1, nT-n-k) = \frac{(R^2_{FE} - R^2_{pooled\_OLS})\big/(n-1)}{(1- R^2_{FE})\big/(nT-n-k)} \qquad (3.13)$$

If the null hypothesis is rejected, we can conclude that there is a significant fixed effect or significant increase in goodness-of-fit in the fixed-effect model.

Second, the BPLM test compares the RE model and pooled OLS and examines the existence of random effects. The null hypothesis is that the individual-specific variance components are zero. The BPLM statistic follows the chi-squared distribution with one degree of freedom:

$$LM_u = \frac{nT}{2(T-1)} \left[\frac{\sum_{i=1}^{n}(\sum_{t=1}^{T} \hat{e}_{it})^2}{SSE_{pooled\_OLS}} \right]^2 \sim \chi^2(1) \qquad (3.14)$$

where: $\hat{e}_{it}$ is the *n × 1* vector of the group means of pooled regression residuals. If the null hypothesis is rejected, there is a significant random effect in the panel data and, hence, the RE model is more appropriate to deal with heterogeneity than pooled OLS.

Third, when both the F test and Breusch and Pagan Lagrangian multiplier test reject the null hypothesis, the unobserved individual effect exists in the model. Although there is a concern about the Hausman test as the difference of covariance matrices may be negative, we can conduct the Hausman test for FEM and REM under the null hypothesis that individual effects are uncorrelated with any regressor in the model (Hausman, 1978). The estimates of LSDV and GLS should not differ systematically under the null hypothesis. This test statistic follows a chi-square distribution with k degrees of freedom:

$$W = (\beta_{FE} - \beta_{RE})'\widehat{W}^{-1}(\beta_{FE} - \beta_{RE}) \sim \chi^2(k) \tag{3.15}$$

where: $\widehat{W}$ is the difference in the estimated covariance matrices of FEM and REM.

Table 3.2   Pre-estimation diagnostic tests for equation 3.9

F-test, null hypothesis: at least one group/time-specific intercept is not zero.	
F-statistic (p-value)	< 0.01
Breusch and Pagan Lagrangian multiplier test, null hypothesis: individual (time) specific variance components are zero.	
Chi-square (p-value)	< 0.01
Hausman test, null hypothesis: individual effects are uncorrelated with any repressor in the model.	
Chi-square (p-value)	< 0.01

Table 3.2 shows the results of the F test, Breusch and Pagan Lagrangian multiplier test and Hausman test. All tests reject the null hypothesis. Thus, I use the FE estimator to control for the time-invariant effects in the sample. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. To control for the existence of the unobservable industry- and year-specific confounding factors, I add a set of industry and year dummies to the baseline model. Additionally, I use 2SLS/IV as an alternative approach to take into account the potential endogeneity between tax avoidance and profitability suggested by Desai and Dhamapala (2009) to validate the regression results from the fixed effect.

Desai and Dhamapala (2009) recommend taking account of industry fixed effects and time effects, the existence of other individual effects and the potential endogenous relationship between CTA and firm performance still violates assumption (d). To address this problem, common estimation methods are FE and 2SLS/IV estimation.

FE estimation

The time-invariant effects are removed in the FE model. Separating the variables into two groups of endogenous and exogenous variables, equation (3.9) is re-written as:

$$Y_{it} = \alpha + \beta\ ED_{i,t} + \gamma\ EX_{i,t} + \varepsilon_{it} + u_i \tag{3.16}$$

where: i is indexed firm and t is indexed year; u denotes firm-level unobserved heterogeneity; ε denotes the idiosyncratic error term; Y is the independent variable; and EX and ED are exogenous and endogenous variables, respectively.

FE regression is expected to mitigate the bias of unobserved and time-invariant firm characteristics on predictors that affect the outcome. The FE estimator could provide consistent estimators whether or not the unobserved time-invariant firm effects are correlated with predictors. For within-group action equation (3.16) is transformed into a mean deviation for each firm over time as equation (3.17):

$$\overline{Y}_{it} = \overline{\alpha} + \beta\ \overline{EX}_{it} + \gamma\ \overline{ED}_{it}\ +\ \overline{\varepsilon}_{it}\ +\ \overline{u}_i \qquad (3.17)$$

Subtracting (3.17) from (3.16), the time-invariant effects are removed and, hence, assumption (d) is satisfied. As a result, the OLS regression is unbiased and consistent, particularly when the number of observations reaches infinity (Hill et al., 2011). However, the consistent estimation may be biased if the ED is correlated with ε_{it}. This bias can be eliminated by estimating the fixed-effects model with instrumental variables.

2SLS/IV estimation

Endogenous variables are transformed to exogenous variables by using instrumental variables to address the endogeneity problem arising from the correlation between ED and ε_{it}. Instrumental variables can explain ED but are not correlated to ε_i. I assume there are g endogenous variables, h instrument variables and k exogenous variables. The condition for a feasible 2SLS/IV is g, which is less than or equal to h.

In the first stage, I run the regression of ED on IV and EX following g in equations (3.18):

$$ED_j = a + b_1 IV_1 + b_2 IV_2 + \ldots + b_h IV_n +\ c_1 EX_1 + c_2 EX_2 + \ldots + c_k EX_k + e \qquad (3.18)$$

where: j = 1, 2,…,g

I use all estimated parameters in (3.18) to get an estimate for ED ($\hat{ED}_{it}$) which replaces ED in equation (3.16) in the second stage. I estimate equation (3.19) by OLS regression in the second stage of 2SLS/IV. The estimate of b_j from 2SLS/IV is more efficient:

$$Y\ =\ \alpha + \beta_j \sum_{1}^{g} \hat{ED}_j\ + \gamma\ EX\ + e \qquad (3.19)$$

The validity of 2SLS/IV

The validity of 2SLS/IV depends on how good the instruments are. First, I check whether the variables are indeed endogenous using the Hausman test for endogeneity. The null hypothesis is that the

covariance between the potential endogenous variables and the error term is zero. Endogeneity exists if the null hypothesis is rejected. Second, if h > k, the Sargan-Hansen test (for overidentifying restrictions) is used to test whether there is a correlation between the IVs and the error terms. The null hypothesis is that the covariance between the instruments and the error term is zero. The extra instruments are valid if the null hypothesis is not rejected. Third, based on the first-stage F statistic, Cragg-Donald Wald F statistic and the Kleibergen-Paap rk Wald F statistic, the instruments are weak if both the Cragg-Donald Wald F statistic and the Kleibergen-Paap rk Wald F statistic exceed the critical values suggested by Stock and Yogo (2005).

Collectively, I use the FE estimator as the main estimation method and 2SLS/IV for a robustness check to control the potential endogenous relationship between CTA and firm performance.

3.2.2 The effect of the board of directors on the valuation of corporate tax avoidance.

Based on signalling theory, the firm value in the last year can be a good signal affecting firm value in the current year (Connelly et al, 2011). Desai and Dhamapala (2009) suggest that firms could avoid more taxes if they have worse operating performance in the previous period. Based on Desai and Dhamapala (2009), I account for the lag of firm value as a major factor influencing the future value[29]. The baseline model is:

$$FV_{i,t} = \alpha + \delta FV_{i,t-1} + \beta BTD_{i,t} + \gamma Control_{i,t} + Industry + Year + \varepsilon_{i,t} \qquad (3.20)$$

where: $FV_{i,t}$ is firm value measured by Tobin's q and market value of firm i in year t; $BTD_{i,t}$ is the book-tax differences of firm i in year t; $Control_{i,t}$ is a vector of the control variables including firm size (SIZE), sales growth (GROWTH), financial leverage (LEV), fixed assets (PPE), intangible assets (INTANG), firm age (AGE) and firm risk (RISK) (Love & Klapper, 2004; Connolly & Hirschey, 2005; Maury & Pajuste, 2005; Jiraporn et al., 2008; Jo and Harjoto, 2011; Wang, 2011; Black et al., 2014; Tang, 2017). I also control for the effect of internal governance on firm value by institution ownership (INST), state ownership (STATE) and foreign ownership (FOREIGN) and the effect of earnings management (DIS_ACC) on firm value. Table 3.3 defines the baseline model (equation 3.20) variables.

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[29] Based on Wintoki, Linck, and Netter (2012), after using OLS regression on (3.20) which includes the past firm value, we can get a clue of the dynamics in the relationship between CTA and firm value. While the R square is about 30% higher than that of the "static" model without the lag of firm value, the magnitude of the estimated coefficient of BTD is still significant and decreased by about 80% (see Appendix A).

Table 3.3   Definitions of variables for equation 3.20

Variable	Acronym	Definition
Firm value		
Tobin's q	Q	Tobin's q of a firm
Market value	MV	The market value of equity is scaled by lagged total assets.
Tax avoidance		
The book-tax difference	BTD	Pre-tax accounting income – (Tax expense/ Tax rate) +Δ NOL
Control variables for the effects of financial characteristics on firm value		
Dividend	DIV	Cash dividend divided by lagged TA
Sale growth	GROWTH	Growth revenues of a firm that equals changes in revenues scaled by revenues of the previous fiscal year.
Firm size	SIZ	Total asset at the end of the year
Leverage	LEV	Long-term debt divided by lagged TA
Capital intensive	PPE	PPE divided by lagged TA
Intangible assets	INTANG	Intangible assets divided by lagged TA
Firm age	AGE	The number of years that firms are established
Firm Risk	RISK	Applied betas which measure the percentage change in the price of equity given one per cent in its benchmark index
Earning management	DIS_ACC	Discretionary accruals based on Dechow et al. (1995)
Institutional ownership	INST	Percentage of shares held by institutions
State ownership	STATE	Percentage of state ownership
Foreign ownership	FOREIGN	Percentage of shares held by foreigners

Table 3.4 shows the results of the F test and Hausman test. All tests reject the null hypothesis. Thus, I use the FE estimator to control for the time-invariant effects in the sample. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. To control for the existence of the unobservable industry- and year-specific confounding factors, I add a set of industry and year dummies to the baseline model.

To address potential endogeneity arising from the dynamic panel data and the relationship between CTA and firm value, I use the system generalised method of moments (GMM) estimator to validate the results from the FE and OLS estimation.

According to Desai and Dhamapala (2009), unobserved factors or exogenous shocks can affect both firm value and tax avoidance leading to an endogenous relationship between CTA and firm value. With the potential endogeneity of tax avoidance activities and the dynamic nature of the panel data, assumption (d) is violated. To deal with endogeneity problems, some common estimation methods are FE and system-GMM estimation.

Table 3.4   The results of the pre-estimation diagnostic test for equation 3.20

F-test, null hypothesis: at least one group/time-specific intercept is not zero	
F-statistic (p-value)	< 0.01
Hausman test, null hypothesis: individual effects are uncorrelated with any repressor in the model	
Chi-squared (p-value)	< 0.01

FE estimation

Assume equation (3.21) represents equation (3.20):

$$Y_{it} = \alpha_0 + \alpha_1 Y_{i,t-1} + \alpha_2 EX_{i,t} + \alpha_3 ED_{i,t} + \varepsilon_{it} + u_i \qquad (3.21)$$

where: i is indexes firm; t is indexes year; u denotes firm-level unobserved heterogeneity; and ε denotes the idiosyncratic error term. Y is the independent variable. EX and ED are exogenous and endogenous variables, respectively. Based on within-group action in which equation (3.21) is transformed into a mean deviation for each firm over time as equation (3.22):

$$\overline{Y}_{it} = \alpha_0 + \alpha_1 \overline{Y}_{it-1} + \alpha_2 \overline{EX}_{it} + \alpha_3 \overline{ED}_{it} + \overline{\varepsilon}_{it} + \overline{u}_i \qquad (3.22)$$

The time-invariant effects are removed when I subtract equation (3.22) from (3.21). However, the dynamic nature of the data could lead to another endogeneity when the new error term ($\varepsilon_{it} - \overline{\varepsilon}_{it}$) is correlated with the lag of the independent variable ($Y_{i,t-1}$). The presence of the lag of dependent variables still leads to endogeneity problems and hence fixed effect model will be biased.

System-GMM estimation

To deal with the dynamic panel bias arising from the correlation between the lagged value of the dependent variable and firm-level unobserved heterogeneity in error term and endogeneity biases, Blundell and Bond (1998) recommend using the system GMM estimation method, especially on panel data with a short period and slight changes in variables such as the BoD's characteristics. In the first differenced equations, GMM removes firm-level unobserved heterogeneity in the error term by internally transforming the data (first difference). In addition to the first differencing, the lagged value of predictors is used as IV, which is expected to be orthogonal to the error (Roodman, 2009). The system-GMM uses additional moment restrictions by including the equations in both levels and differences of variables. To deal with potential unobservable heterogeneity arising from these equations, the correlation among the explained variables is assumed to be constant by time and hence result in an additional set of orthogonality conditions.

The validity of system GMM

The instruments are valid if there is no autocorrelation in the first–differenced error term and the group of instruments is exogenous. First, the Arellano and Bond (1991) test is used to test the serial correlation, including first-order (AR (1)) and second-order autocorrelation (AR (2)). The null

hypothesis is that there is no autocorrelation. The null hypothesis is expected to be rejected for the test of the first-order autocorrelation. If the null hypothesis is not rejected for second-order autocorrelation, lags of the second or further could be instruments. Second, the Hansen test is used to test the validity of over-identifying restrictions. The validity of subsets of instruments (IV- style and GMM- style) are performed by the Difference-in-Hansen test. The null hypothesis that instruments as a group are exogenous is expected not to be rejected.

Collectively, I use the FE estimator as the main estimation method and 2SLS/IV for a robustness check to control the potential endogenous relationship between CTA and firm performance.

3.2.3 Board of directors and the value implication of corporate tax avoidance

To examine the mediation effect of BoD on the CTA-firm value relationship, I generate the interaction term between BTD and each attribute of the BoD, including the size (BSIZE), independence of the BoD (NED), female representation (FEMALE) and CEO duality (DUA). Next, I include both each attribute of the BoD and relative interaction term into equation (3.20) to further analyse the effect of non-executive members of the BoD on the valuation implication of CTA. I use equation (3.23) to investigate the joint effect of BTD and BoD on firm value:

$$FV_{i,t-1} = \tau_0 + \tau_1 * FV_{i,t-1} + \tau_2 * BTD_{i,t} * BoD_{i,t} + \tau_3 * BoD_{i,t} + \tau_4\, Control_{i,t} + Industry +$$
$$Year + \varepsilon_t \qquad (3.23)$$

where: $FV_{i,t}$ is firm value of firm i in year t; $BTD_{i,t}$ is the book-tax difference of firm i in year t; $BoD_{i,t}$ is an attribute of the BoD of firm i in year t; $BTD_{i,t} * BoD_{i,t}$ is the interaction term between book-tax difference and the attribute of the BoD; and $Control_{i,t}$ is a vector of the control variables. Table 3.5 defines equation (3.23)'s variables.

I use the FE estimator to control for the time-invariant effects in the sample. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. To control for the existence of the unobservable industry- and year-specific confounding factors, I add a set of industry and year dummies to the baseline model.

Table 3.5   Definitions of the variables in equation 3.23

Variable	Acronym	Definition
Firm value		
Tobin's q	Q	Tobin's q of the firm
Market value	MV	The market value of equity is scaled by lagged total assets.
Corporate tax avoidance		
The book-tax difference	BTD	Pre-tax accounting income – (Tax expense/ Tax rate) +Δ NOL
Board of Directors		
Board size	BSIZE	The number of members on the BoD
Board independence	NED	The number of non-executive members on the BoD
Female representation	FEMALE	The number of female members on the BoD
CEO duality	DUA	A dummy variable, coded one when the CEO is also Chairman of the Board, otherwise zero
The interaction term between corporate tax avoidance and the Board of Directors		
Board size and CTA	BTD*BSIZE	The interaction term between book-tax difference and the number of members on the BoD
Board independence and CTA	BTD*NED	The interaction term between book-tax difference and the number of non-executive members on the BoD
Female representation and CTA	BTD*FEMALE	The interaction term between book-tax difference and the number of female members on the BoD
CEO duality and CTA	BTD*DUA	The interaction term between book-tax difference and CEO duality
Control variables for the effects of financial characteristics on CTA		
Firm profitability	ROA	Return on assets
Firm size	SIZ	Total asset at the end of the year
Leverage	LEV	Long-term debt divided by lagged TA
Capital intensive	PPE	PPE divided by lagged TA
Intangible assets	INTANG	Intangible assets divided by lagged TA
Firm age	AGE	The number of years that firms are founded
Firm Risk	RISK	Applied betas which measure the percentage change in the price of equity given one per cent in its benchmark index
Earning management	DIS_ACC	Discretionary accruals based on Dechow et al. (1995)
Institutional ownership	INST	Percentage of shares held by institutions
State ownership	STATE	Percentage of state ownership
Foreign ownership	FOREIGN	Percentage of shares held by foreigners

3.3 Data

To examine the impacts of the BoD on CTA and the effect of CTA on firm value, my sample consists of 749 firms listed on the Vietnam stock market as of December 2018. The study excluded 102 financial firms from the sample because of differences in characteristics and regulations. Though financial firms focus on borrowing money and investing in financial assets, non-financial firms focus on other products

Table 3.6   Sample selection

	Number of firms
Firm listed on the Vietnam stock market- 2007-2018	749
Less Financial firms	102
Less missing data	134
Full sample (main regression)	513
Industry	
Communication	14
Consumer discretionary	89
Consumer staples	51
Energy	29
Healthcare	17
Industrials	175
Materials	108
Technology	11
Unility	19

such as materials, industrials, health care, technology and utilities. In Vietnam, firms' operations are regulated by the law on enterprises, but financial firms 'operations must comply with the provisions of the Law on credit institutions because of their specific business products. Moreover, there are also differences between non-financial and financial firms in recording financial statements and accounting policies. Data collection begins in 2007 when the regulation on corporate governance applicable to listed firms (Decision No 12/2007/QD/BTC) was enacted. After excluding omitted observations, the final sample covers 513 non-financial listed firms from 2010-2018. Annual financial data are from the Bloomberg database and then merged with the additional data related to the BoD that are hand-collected from firms' corporate governance reports and annual reports.

3.4 Chapter summary

Based on the literature, this study uses book-tax difference as the main measurement of CTA. Other most common measures of CTA including the ETRs (AETR, CETR) and discretionary and permanent book-tax difference (DBTD, PBTD) are used for robustness checks. The main proxy for firm value is Tobin's q. Market value is used for a robustness check. Regarding the BoD, the study takes into account four common attributes of BoDs, size, independence, female representation, and CEO duality. The study also controls for other factors influencing CTA: firm size, firm age, leverage, capital intensity, intangible assets, profitability, and ownership structure. Additionally, I take into account a set of control variables for other effects influencing firm value: firm size, firm age, firm risk, leverage, capital intensity, intangible assets, ownership structure, earnings management, growth, and dividends.

Following Park (2011), the results of the F test, Breusch and Pagan Lagrangian multiplier test and Hausman show that there is a significant fixed effect in baseline models and FE estimator is more efficient. Thus, I use the FE estimator to control for time-invariant effects in the sample. Standard

errors are clustered along two dimensions (by firm and year) to control for heteroskedasticity and autocorrelation. To control for the existence of the unobservable industry- and year-specific confounding factors, I add a set of industry and year dummies to the baseline models. I also use 2SLS/IV and system-GMM estimator for robustness checks.

Finally, Chapter 3 describes data collection. The data consist of 513 non-financial listed firms from 2007-2018.

Chapter 4

Results and discussion

Chapter 4 presents the empirical findings of the relationship among the BoD, CTA and firm value in non-financial Vietnamese listed firms from fixed effect, ordinary least square and system generalised method of moment estimations. The chapter is organised as follows.

Section 4.1 presents the descriptive statistics and correlation matrix of the variables in the study. Section 4.2 presents the results of the relationship between the BoD and CTA. Section 4.2.1 reports the results from the baseline regression model. Section 4.2.2 presents a robustness check using an alternative proxy of CTA and 2SLS/IV estimation. Section 4.3 reports the results of the relationship between CTA and firm value. Section 4.2.1 reports the results from the baseline regression model. Section 4.2.2 presents a robustness check using alternative proxies of CTA and system-GMM estimation. Section 4.4 analyses the effect of BoD on the CTA-firm value relationship. Section 4.4.1 presents the regression results of the effect of non-executive directors on the BoD on the CTA-firm value relationship. Section 4.4.2 reports the regression results of the moderation effect of female directors on the BoD on the CTA-firm value relationship. The results of the effect of CEO duality and the number of directors of the BoD on the CTA-firm value relationship are discussed in Sections 4.4.3 and 4.4.4, respectively. Section 4.5 summarises Chapter 4.

4.1 Descriptive Statistics

Table 4.1 reports the descriptive statistics of the variables used in the study. The results show the average Tobin's q for our sample is 1.063 with a standard deviation of 0.483. An average Tobin's q greater than 1 indicates that firms are overvalued in the research period. Furthermore, the series varies significantly with a standard deviation of 0.363. The overall market value for the sample is 1,436 billion VND and the average MV is 0.777. The average book-tax difference is 21.463 million VND. The tax avoidance level varies significantly among firms during the research period. The mean score of BTD is 0.005 with a standard deviation of 0.044 (over eight times larger than the mean). Similarly, the average DBTD is -0.002 with a standard deviation of 0.045 (which is more than 20 times larger than the mean). Additionally, the average AETR is 20.873% and the highest AETR in the sample is 99.179%. Taking account of deferred tax expenses, the average CETR (20.349%) is lower than the average AETR. Thus, the deferred tax assets can be seen as a tax planning strategy by which firms can reduce taxes temporarily. Both AETR and CETR are lower than the current statutory tax rate of 25%. Vietnamese non-financial listed firms can take advantage of tax incentives to avoid taxes.

Table 4.1   The descriptive statistics of the regression variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Q	3627	1.063	.483	.394	3.961
MV	3627	.777	.627	-.104	4.184
BTD	2763	.005	.044	-.153	.208
DBTD	2762	-.002	.045	-.163	.204
PBTD	2726	.006	.045	-.144	.213
AETR	3399	20.873	12.096	0	99.178
CETR	3501	20.349	12.659	0	81.547
ROA	3696	6.1	7.462	-12.379	36.406
SIZE	3707	13.292	1.47	9.862	16.942
LEV	3707	.081	.139	0	.709
PPE	3707	.296	.243	.002	1.148
INTANG	3707	.014	.039	0	.261
AGE	3707	26.171	15.202	2	161
GROWTH	3695	15.018	52.884	-75.45	354.289
DIV	3694	.033	.048	0	.84
DIS_ACC	3639	.003	.161	-1.69	2.089
RISK	3704	.456	.307	-.702	1.569
BSIZE	3599	5.501	1.113	3	11
NED	3599	3.375	1.293	0	9
FEMALE	3599	.76	.92	0	6
DUA	3599	.297	.457	0	1
INST	3707	16.903	23.867	0	81.718
STATE	3707	25.194	24.977	0	82.87
FOREIGN	3707	10.059	13.483	0	49

Source: Author's calculations.

An average firm in the sample has total assets of 1,743 billion VND and the SIZE (log value of total assets) of 13.329. The gross fixed assets for the sample ranges from 1 billion VND to 13,500 billion VND; the average PPE is 0.296. An average firm in the sample has an INTANG of 0.014 and a sales growth of 15.018%. The mean of LEV is approximately 0.081, meaning that, on average, only about 8.1% of total assets is funded by long term debt. The average RISK is 0.456 and about 90% of firm-year observations witnessed a low level of applied beta (less than 0.805), which measures the percentage change in the price of equity given one per cent in its benchmark index. A beta less than 1.0 indicates a stock with lower volatility and also lower returns. A firm's age was calculated by year based on when the firm was founded. The overall mean score of AGE is 26 years.

The legal framework for corporate governance includes the Enterprises Law[30], the Securities Law[31] and circulars[32] that provide regulations on corporate governance applicable to listed firms in Vietnam. According to the Corporate Governance Circular in 2012 (Ministry of Finance, 2012), the number of BoDs is from 5 to 11 and one-third must be non-executive members. Most Vietnamese non-financial

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[30] Enterprise Law 2005 (No. 60/2005/QH11), replaced by Enterprise Law 2014 (No. 68-2014-QH13)
[31] Law on Securities (No.70/2006/QH11), replaced by Law on Securities (No. 62/2010/QH12)
[32] Circular 121/2012/ND-CP, replaced by Decree 71/2017/ND-CP.

listed firms meet these requirements. The BoD size of Vietnamese non-financial listed firms during the study period ranged from 3 to 11 members. Table 4.2 shows firm-year observations with up to 5 directors and over 5 members on the BoD were 68.60% and 26.95%, respectively. The number of non-executive directors on the BoD ranges from 0 to 9 members; they hold about 61.12% of board seats of an average firm in the sample. Firm-year observations with fewer than 3 non-executive directors and from 3 to 5 non-executive directors of the BoD account for 23.62% and 70.52%, respectively. The number of firm-year observations with over 5 non-executive members of the BoD increased over the study period. Though the CEO of a non-financial listed firm can be the Chair of the BoD if the general meeting of shareholders (GMS) approves, the proportion of firms with CEO duality has decreased over time. In 2018, fewer than one in four Vietnamese non-financial listed companies had CEO duality. The distribution of attributes of the BoD, CTA and firm value in our sample is visualized by the histogram in Appendix A.

Table 4.2   Composition break down of the Board of Directors by year

BoD's characteristics	Pool	2010	2011	2012	2013	2014	2015	2016	2017	2018
BSIZE										
Fewer than 5	4.45%	2.65%	2.27%	1.93%	4.40%	3.18%	2.78%	3.17%	7.57%	9.13%
5	68.60%	68.56%	69.48%	64.73%	67.80%	70.23%	72.42%	71.63%	67.93%	62.17%
Over 5 to 11	26.95%	29.79%	28.25%	33.34%	27.80%	26.59%	24.80%	25.20%	24.50%	28.70%
NED										
Fewer than 3	23.62%	30.68%	29.22%	24.15%	24.15%	24.32%	22.42%	20.04%	22.31%	21.09%
3 to 5	70.52%	65.15%	65.59%	70.54%	70.24%	70.00%	71.23%	74.60%	71.91%	70.87%
over 5 to 9	5.86%	4.17%	5.19%	5.31%	5.61%	5.68%	6.35%	5.36%	5.78%	8.04%
FEMALE										
0	49.54%	49.62%	49.03%	47.34%	51.71%	52.05%	48.21%	47.82%	49.40%	50.00%
1	31.48%	31.82%	31.82%	31.88%	30.73%	31.82%	32.14%	31.75%	31.67%	30.00%
2	13.70%	14.02%	14.61%	15.94%	13.41%	12.05%	14.29%	14.29%	12.75%	13.48%
More than 2	5.28%	4.54%	4.54%	4.84%	4.15%	4.08%	5.36%	6.14%	6.18%	6.52%
DUA										
CEO duality	29.73%	41.29%	41.23%	37.20%	31.22%	30.45%	26.59%	25.60%	24.50%	23.70%
Not duality	70.27%	58.71%	58.77%	62.80%	68.78%	69.55%	73.41%	74.40%	75.50%	76.30%

Source: Author's calculations.

According to the current corporate governance regulations, there are no quotas for women on the BoDs. Over half of firm-year observations have at least one female director on the BoD; the highest percentage of women on a board is 83.30 % but, on average, women hold about 13.63% of board seats. Among firms with female representation on the BoD, only 10.46% of firm-year observations have over two female directors on the BoD. The proportions of firms with one and two female directors on the BoD are 62.24% and 27.30%, respectively. Thus, the representation of women on boards remains significantly behind the best practice of European jurisdictions, which have between 30 and 40 per cent boardroom female representation.

Table 4.3   An analysis of firm ownership structure by sector

Firm type	State ownership	Foreign ownership	Institutional ownership
Communication	**21.47**	**13.86**	**11.14**
	(5.23)	(6.28)	(3.59)
	[17.28]	[16.76]	[14.80]
Consumer discretionary	**18.09**	**12.85**	**16.09**
	(7.60)	(6.04)	(5.25)
	[21.54]	[16.09]	[22.26]
Consumer Staples	**19.16**	**11.27**	**16.38**
	(6.66)	(5.24)	(3.30)
	[23.19]	[13.64]	[23.57]
Energy	**46.01**	**7.98**	**33.63**
	(51.00)	(5.21)	(38.42)
	[18.11]	[9.12]	[26.84]
Health Care	**20.27**	**17.73**	**17.79**
	(19.14)	(6.07)	(4.81)
	[15.96]	[19.44]	[23.51]
Industrials	**25.94**	**8.93**	**14.68**
	(21.56)	(3.25)	(1.61)
	[24.82]	[12.43]	[22.42]
Materials	**24.81**	**8.04**	**16.89**
	(14.00)	(2.95)	(.44)
	[27.71]	[11.02]	[25.27]
Technology	**26.90**	**7.71**	**22.70**
	(32.81)	(3.12)	(5.04)
	[25.60]	[12.00]	[26.38]
Utility	**45.09**	**8.93**	**16.25**
	(51.00)	(3.45)	(.99)
	[23.37]	[12.00]	[25.78]
Pool	**25.19**	**10.06**	**16.90**
	(19.64)	(3.98)	(3.53)
	[24.98]	[13.48]	[23.87]

Source: Author's calculations.

Ownership structure is broken down into state ownership, foreign ownership and institutional ownership by sectors (see Table 4.3). Following the Doi Moi reform to transform from a centrally–planned economy to a market-oriented economy, since 1992, privatization has been seen as an essential part of the ongoing restructuring of the economy towards efficient state-owned enterprise operations. Privatization in Vietnam has proceeded slowly because of the fear of losing control of authority and asset valuation issues (Tran et al., 2015). Thus, state ownership remains dominant, especially in some core sectors. Many Vietnamese non-financial listed firms had a high level of state ownership during the study period (see Table 4.3); the overall average of state ownership is 25.19%. The State continues to hold about a 45% stake of an average firm in the energy and utility industries (water supply, waste management, and electricity and gas provision).

Despite the slow privatization, the ownership structure has become much more diversified with an increase in different types of owners over the last two decades. As of the end of March 2019, the total

number of securities accounts reached over 2.1 million, 29,004 of which were owned by foreign investors and 4,089 by institutional investors (VSD, 2019). Vietnam is an investable market attracting the attention of an increasing number of both foreign and domestic investors because of sustainable economic growth, strategic location and growing population with young skilled labour. However, there is a foreign ownership cap in the initial legal provision of 2009[33] which allows foreign investors to hold a maximum of 49% of shares. Despite the removal of the foreign ownership cap for Vietnamese non-financial listed firms in current regulations[34], foreign ownership limits remain in some businesses such as 30% for commercial banks and 49% for companies conducting business in conditional sectors for foreign investors but no specific regulations on foreign ownership percentage are applied. There is an inconsistency between regulations for foreign limits. As a result, there is less participation in corporate ownership by foreign investors in Vietnam. The maximum rate for foreign ownership is 49% in the sample and, on average, foreign investors hold 10.06% of shares (see Table 4.3). Institutional investors have an average (median) shareholding of 16.90% (3.53%). The overall average institutional ownership is at a moderate level, but the figures vary widely (ranging from 0% to 82.72%).

Table 4.4 presents the correlation matrix of variables used in the baseline models. The correlation coefficients of the independent variables are well under 0.8, presenting a low possibility of "multi-collinearity" (Gujarati, 2003). The variance inflation factors (VIFs) of the independent variables of our baseline models in Table 4.5 are less than the rule-of-thumb value of 10. This suggests that multi-collinearity is not present in our regression model (Chatterjee & Hadi, 2012). All the correlation coefficients between the BoD's characteristics (NED, FEMALE, DUA and BSIZE) are positive and significant at the 1% level. The correlation coefficient between NED and Q (0.137) is the highest of all correlation coefficients between other board characteristics and Q. Appendix B shows the boxplot and scatterplot of CTA levels in relation to NED.

The positive correlation between BTD and Q (0.24) is significant at the 1% level, indicating that an increase in CTA can lead to an increase in firm value. A Scatter plot of firm value in relation to CTA levels is presented in Appendix C.

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[33] Decision No. 55/2009/QD-TTg dated 15 April 2009 of the Prime Minister on percentage participation of foreign investors in securities market of Vietnam ("Decision 55").
[34] Decree No. 60/2015/ND-CP ("Decree 60") dated 26 June, 2015 of the Government

Table 4.4   Correlation matrix of the variables in the models

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Q	1.000																
(2) BTD	0.240***	1.000															
(3) ROA	0.567***	0.591***	1.000														
(4) NED	0.101***	0.137***	0.066***	1.000													
(5) FEMALE	0.078***	0.045**	0.084***	0.084***	1.000												
(6) BSIZE	0.132***	0.117***	0.075***	0.572***	0.207***	1.000											
(7) DUA	-0.025*	-0.021	-0.005	-0.230***	0.069***	0.003	1.000										
(8) SIZE	0.139***	0.112***	-0.061***	0.191***	0.002	0.247***	-0.102***	1.000									
(9) LEV	0.035**	0.043**	-0.153***	0.058***	-0.052***	0.093***	-0.061***	0.351***	1.000								
(10) PPE	0.088***	0.164***	0.055***	0.090***	-0.008	0.106***	-0.058***	0.141***	0.601***	1.000							
(11) INTANG	0.024	0.044**	0.010	0.072***	0.085***	0.112***	0.029*	0.000	0.091***	-0.009	1.000						
(12) AGE	0.092***	-0.032*	0.054***	-0.095***	0.009	0.050***	0.013	0.081***	-0.017	0.037***	-0.097***	1.000					
(13) DIS_ACC	-0.004	0.133***	0.072***	-0.016	0.010	-0.029**	0.010	0.038*	0.006	-0.055***	-0.018	-0.032**	1.000				
(14) RISK	0.026*	0.027	0.062***	-0.025*	-0.007	-0.003	0.048***	0.014	0.050***	0.050***	0.050***	-0.101***	0.017	1.000			
(15) INST	0.175***	0.036**	0.113***	0.048***	-0.025*	0.036**	-0.136***	0.201***	0.020	0.029	0.009	0.121*	-0.032***	-0.008**	1.000		
(16) STATE	0.118***	0.030	0.101***	-0.122***	-0.182***	-0.157***	-0.199***	0.015	0.098***	0.128***	-0.112***	0.212***	-0.059***	0.012	0.318***	1.000	
(17) FOREIGN	0.237***	0.113***	0.215***	0.202***	0.165***	0.313***	-0.014	0.298***	-0.010	-0.002	0.063***	-0.027*	0.019	0.011	0.206***	-0.157***	1.000

Note: ***, **, and * denote statistical significance levels of 1 percent, 5 percent and 10 percent, respectively.

Table 4.5   Variance inflation factors of the independent variables of our baseline models

Variable	VIF (BTD)	Variable	VIF (Q)
BSIZE	1.78	L.Q	1.58
NED	1.62	BTD	1.21
FEMALE	1.11	GROWTH	1.07
DUA	1.19	DIV	1.46
INST	1.25	INST	1.26
STATE	1.41	STATE	1.30
FOREIGN	1.39	FOREIGN	1.28
SIZE	1.39	SIZE	1.46
LEV	1.98	LEV	1.97
PPE	1.69	PPE	1.74
AGE	1.10	AGE	1.10
INTANG	1.13	INTANG	1.11
ROA	1.17	RISK	1.03
		DIS ACC	1.06

Source: Author's calculations.

4.2   Board of Directors and corporate tax avoidance

4.2.1   Regression results

To observe the effect of the BoD on CTA, we estimate the following specifications:

$$BTD_{it} = \alpha_0 + \alpha_1 NED_{i,t} + \alpha_2 FEMALE_{it} + \alpha_3 DUA_{i,t} + \alpha_4 BSIZE_{i,t} + \alpha_5 Control_{i,t} + Industry + Year + \varepsilon_{1i,t} \quad (4.1)$$

where: $BTD_{i,t}$ is the book-tax difference of firm i in year t. $NED_{i,t}$, $FEMALE_{i,t}$, $DUA_{i,t}$, and $BSIZE_{i,t}$ are the number of non-executive directors of the BoD, the number of female directors, CEO duality and the number of directors of the BoD of firm i in year t, respectively. $Control_{i,t}$ is a vector of the control variables. The variables in equation (4.1) are defined in Table 3.1.

The F- test in Table 4.6 indicates that the null hypothesis of the jointly-equal-to-zero of all estimated group/time-specific intercept is rejected at the 1% level. According to Park (2011), if at least one group or time-specific intercepts is not zero, one can conclude that there is a significant fixed effect or significant increase in the goodness of fit in the fixed-effect model. The Breusch and Pagan Lagrangian multiplier tests for random effects reject the null hypothesis at the 1% level. This result means the individual (time) specific variance components are not zero. The Hausman test also shows that the individual effects are correlated with other repressors in the model as the null hypothesis is rejected at the 1% level. Thus, the FE model is better than the pooled OLS and random effect one.

Table 4.6   Pre-estimation diagnostic test results (equation 4.1)

F-test, null hypothesis: at least one group/time-specific intercept is not zero	
F-statistic	129.85***
Breusch and Pagan Lagrangian multiplier test, null hypothesis: individual (time) specific variance components are zero	
Chi-squared	3762.53***
Hausman test, null hypothesis: individual effects are uncorrelated with any repressor in the model	
Chi-squared	179.95***
Breusch-Pagan test, null hypothesis: homoscedasticity	
Chi-squared	1184.22***
Wooldridge test, null hypothesis: no autocorrelation	
F-statistic	36.275***

Source: Author's calculations.

Additionally, we conduct the Breusch and Pagan test for heteroscedasticity and the Wooldridge test for autocorrelation in the panel data. All test statistics reject the null hypotheses at the 1% level, implying that there is both heteroscedasticity and serial correlation in the sample. Thus, I use the fixed-effect (FE) estimator to control for the time-invariant effects in the sample. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. To control for the existence of the unobservable industry- and year-specific confounding factors, I add a set of industry and year dummies to the baseline model. I also perform a Paris-Winsten regression to estimate the baseline model under the assumption that the residuals are serially correlated.

Table 4.7 reports the regression results of our baseline model (equation 4.1) which present the effect of BoD size, non-executive directors, female directors and CEO duality on CTA of Vietnamese non-financial listed firms. Columns (2), (3) and (4) present the results using the fixed effect, OLS and Paris-Winsten estimates, respectively.

The overall F- test in all three columns reject the null hypothesis of jointly-equal-to-zero of all estimated coefficients at the 1% level. In other words, the correlation between the model and the dependent variable is statistically significant and R- squared does not equal zero. Table 4.6 shows R-squared is 0.490 in the OLS estimator in column 3 and 0.416 in the FE estimator in column 2.

Table 4.7   Baseline regression results from equation 4.1

(1)	(2)	(3)	(4)
VARIABLE	Fixed Effects	OLS	Paris-Winsten
	BTD	BTD	BTD
NED	0.00255***	0.00209***	0.00163**
	(0.000837)	(0.000651)	(0.000780)
FEMALE	-0.00121	-6.67e-05	0.000117
	(0.00125)	(0.000865)	(0.00106)
DUA	0.00266	0.00166	0.00195
	(0.00249)	(0.00172)	(0.00220)
BSIZE	-0.000196	-0.000522	-4.86e-05
	(0.00127)	(0.000785)	(0.000990)
ROA	0.00508***	0.00348***	0.00436***
	(0.000234)	(0.000193)	(0.000233)
SIZE	0.00815***	0.00282***	0.00313***
	(0.00230)	(0.000547)	(0.000785)
LEV	-0.00375	0.000843	3.91e-05
	(0.00919)	(0.00750)	(0.00933)
PPE	0.0220***	0.0231***	0.0223***
	(0.00660)	(0.00397)	(0.00530)
INTANG	0.0427*	0.0366	0.0535*
	(0.0236)	(0.0251)	(0.0282)
AGE	-0.00547***	-0.000113**	-0.000131*
	(0.00128)	(4.47e-05)	(6.71e-05)
INST	-4.76e-05	-4.15e-05	-5.57e-05
	(3.99e-05)	(3.21e-05)	(3.70e-05)
FOREIGN	-0.000283**	-0.000263***	-0.000354***
	(0.000143)	(6.09e-05)	(8.02e-05)
STATE	0.000222***	-7.19e-05**	-6.00e-05
	(7.61e-05)	(3.17e-05)	(4.41e-05)
Observations	2,683	2,683	2,683
R-squared	0.490	0.416	0.437
Number of firms	513		
Industry	YES	YES	YES
Year	YES	YES	YES

Note: This table reports the regression results of the baseline model (equation 4.1). Columns 2, 3 and 4 report the fixed effect, OLS and Paris-Winsten estimates, respectively. I include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.
***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

The coefficient of NED is positive and significant in all columns (Table 4.7). In particular, the NED's coefficient is 0.00255 and significant at the 1% level in column 2. This result indicates that ceteris paribus, BTD is expected to increase by 0.255% for an additional non-executive member appointed to the BoD. Likewise, the standardized coefficient of NED in column 3 (0.00209) is significant at the 1% level and column 4 (0.00163) is significant at the 5% level. As the coefficients are consistently positive and

significant, I conclude that the results are robust to different model specifications and are not driven by serial correlation. These results suggest that the number of non-executive members of the BoD can increase the level of CTA, measured by BTD, in Vietnamese non-financial listed firms. This corroborates the arguments of Minnick and Noga (2010) that the BoD can choose tax avoidance activities because tax-saving effects improve bottom-line performance. Our result is consistent with Khaoula and Ali (2012) and Mulyadi et al. (2014) who show that the independence of the BoD improves tax practice. However, all other coefficients of the BoD's characteristics (FEMALE, DUA and BSIZE) are inconsistent and insignificant.

For ownership structure, the results in Table 4.7 show that CTA is affected by foreign ownership. All coefficients of FOREIGN are negative and significant, even though their magnitude is quite small. In particular, the estimated coefficient of FOREIGN is negative (-0.000292) and significant at the 5% level in column 2. This result indicates that ceteris paribus, Tobin's q is expected to increase by 0.292% for a 1% increase in foreigner ownership. Likewise, the coefficients of FOREIGN in column 3 (-0.000250) and column 4 (-0.000332) are significant at the 1% level. This corroborates the argument that foreign ownership places more emphasis on legitimacy and social responsibility than they do on the benefit of CTA (Yoo & Koh, 2014; Shi et al., 2020). My result contrasts with Salihu et al. (2015) on the positive relationship between foreign ownership and CTA because of better performance. However, there are inconsistent, insignificant effects of state ownership and institutional ownership on CTA. In particular, all estimated coefficients of INST are negative and insignificant. Though the coefficient of STATE in column 2 (0.0243) is significant at the 1% level and in column 3(-0.00585) is significant at the 10% level, the coefficient is insignificant in column 4.

The results in Table 4.7 show the significant effect of firm size, ROA, and capital intensity on CTA. All estimated coefficients of SIZE, ROA, and PPE are positive and significant. The results indicate that larger firms have substantial resources to manipulate the political process in their favour and, therefore, have more opportunities to use CTA (Ribeiro, 2015). The results also support the argument of Kraft (2014) that profitable firms might have a strong incentive to reduce their taxes as they transfer their profit from a high tax sector or area via tax deductions, exemptions and credits. A firm with a large amount of property, plant and equipment are more likely to use tax avoidance based on accelerating depreciation (Ribeiro, 2015).

4.2.2 Robustness check

Alternative proxies of CTA

Based on Desai and Dharmapala (2006) and Wang (2010), I use discretionary total BTD (DBTD), and permanent BTD (PBTD) as alternative proxies for CTA. I use equations (4.2) and (4.3) to examine the effect of non-executive directors, female directors, CEO duality and BoD size on DBTD and PBTD.

$$DBTD_{i,t} = \beta_0 + \beta_1 * NED_{i,t} + \beta_2 * FEMALE_{i,t} + \beta_3 * DUA_{i,t} + \beta_4 * BSIZE_{i,t} + \beta_5 * Control_{i,t} + Industry + Year + \varepsilon_{2i,t} \qquad (4.2)$$

$$PBTD_{i,t} = \gamma_0 + \gamma_1 * NED_{i,t} + \gamma_2 * FEMALE_{i,t} + \gamma_3 * DUA_{i,t} + \gamma_4 * BSIZE_{i,t} + \gamma_5 * Control_{i,t} + Industry + Year + \varepsilon_{3i,t} \qquad (4.3)$$

where: $DBTD_{i,t}$ and $PBTD_{i,t}$ are the discretionary book-tax difference and permanent book-tax difference of firm i in year t, respectively; and $NED_{i,t}$, $FEMALE_{i,t}$, $DUA_{i,t}$, and $BSIZE_{i,t}$ are the number of non-executive directors of the BoD, the number of female directors, CEO duality and the number of directors of the BoD of firm i in year t, respectively. $Control_{i,t}$ is a vector of the control variables. The variables in equations (4.2) to (4.3) are defined in Table 3.1.

Table 4.8 presents the regression results of equations (4.2) and (4.3) using DBTD and PBTD as the dependent variable, respectively. Columns (2) and (3) report the regression results of equation (4.2) using the fixed effect and OLS, respectively. Consistent with the results reported in Table 4.7, the coefficients of NED remains positive and significant. In particular, the NED coefficient is 0.00293 and significant at the 1% level in column 2. This result indicates that ceteris paribus, DBTD is expected to increase by 0.275% for an additional non-executive appointed to the BoD. Likewise, the coefficient of NED in column 3 (0.00225) is significant at the 1% level. The effect of FEMALE and BSIZE on DBTD remain insignificant. All the estimated coefficients of FOREIGN remain positive and significant. Consistent with the baseline regression results reported in Table 4.7, all the estimated coefficients of ROA, SIZE, and PPE in columns (2) and (3) are positive and significant.

The regression results of equation (4.3) with PBTD as the dependent variable using FE and OLS are reported in Table 4.8, columns (4) and (5), respectively. The coefficient of NED in column 4 is 0.00273 and significant at the 1% level. This result can be interpreted that, ceteris paribus, PBTD is expected to increase by 0.273% for an additional non-executive appointed. The coefficient of NED in column 5 (0.00224) remains positive and significant at the 10% level. These results indicate the significant, positive effect of NED on CTA measured by PBTD. Additionally, the positive effect of ROA, SIZE and PPE on PBTD remain significant, but the coefficient of FOREIGN in column 4 is no longer significant.

Table 4.8 **Robustness check using DBTD and PBTD as an alternative proxy for CTA in equations 4.2 and 4.3**

(1)	(2)	(3)	(4)	(5)
VARIABLE	Fixed Effects	OLS	Fixed Effects	OLS
	DBTD	DBTD	PBTD	PBTD
NED	0.00293***	0.00225***	0.00273***	0.00224***
	(0.000966)	(0.000699)	(0.000923)	(0.000683)
FEMALE	-0.00200	-0.000184	-0.00145	-0.000432
	(0.00132)	(0.000894)	(0.00135)	(0.000890)
DUA	0.00280	0.00190	0.00467*	0.00294
	(0.00280)	(0.00184)	(0.00277)	(0.00181)
BSIZE	0.000325	-0.000401	-0.000158	-0.000742
	(0.00139)	(0.000862)	(0.00144)	(0.000830)
ROA	0.00464***	0.00329***	0.00488***	0.00345***
	(0.000257)	(0.000200)	(0.000240)	(0.000200)
SIZE	0.00431	0.00222***	0.00856***	0.00283***
	(0.00270)	(0.000582)	(0.00251)	(0.000567)
LEV	-0.0126	-0.00464	-0.00738	-0.000214
	(0.0110)	(0.00833)	(0.0108)	(0.00843)
PPE	0.0223***	0.0295***	0.0273***	0.0243***
	(0.00744)	(0.00418)	(0.00702)	(0.00428)
INST	-6.39e-05	-2.41e-05	-4.31e-05	-3.78e-05
	(4.32e-05)	(3.24e-05)	(4.35e-05)	(3.49e-05)
INTANG	0.0404	0.0328	0.0507**	0.0453*
	(0.0269)	(0.0264)	(0.0257)	(0.0262)
AGE	0.00317	-8.32e-05*	-0.00634***	-9.96e-05**
	(0.00217)	(4.63e-05)	(0.00131)	(4.67e-05)
FOREIGN	-0.000313**	-0.000235***	-0.000215	-0.000219***
	(0.000150)	(6.38e-05)	(0.000163)	(6.46e-05)
STATE	0.000294***	-2.64e-05	0.000249***	-7.53e-05**
	(8.72e-05)	(3.32e-05)	(8.63e-05)	(3.28e-05)
Observations	2,682	2,682	2,661	2,661
R-squared	0.385	0.365	0.430	0.393
Industry	YES	YES	YES	YES
Year	YES	YES	YES	YES

Note: This table reports the regression results of the baseline model using DBTD and PBTD as a dependent variable. We include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.

***, **, and * denote statistical significance levels of 1 percent, 5 percent and 10 percent, respectively.

Despite the limitation of ETR, I use two common measurements of ETR, accounting ETRs (AETR) and current effective tax rates (CETR), as alternative proxies of CTA for a robustness check (Chen et al., 2010;

Huang et al., 2016). I use equations (4.4) and (4.5) to examine the effect of non-executive directors, female directors, CEO duality and board size on ETRs.

$$AETR_{i,t} = \eta_0 + \eta_1 * NED_{i,t} + \eta_2 * FEMALE_{i,t} + \eta_3 * DUA_{i,t} + \eta_4 * BSIZE_{i,t} + \eta_5 * Control_{i,t} + Industry + Year + \varepsilon_{4i,t} \qquad (4.4)$$

$$CETR_{i,t} = \omega_0 + \omega_1 * NED_{i,t} + \omega_2 * FEMALE_{i,t} + \omega_3 * DUA_{i,t} + \omega_4 * BSIZE_{i,t} + \omega_5 * Control_{i,t} + Industry + Year + \varepsilon_{5i,t} \qquad (4.5)$$

where: $AETR_{i,t}$ and $CETR_{i,t}$ are the accounting ETRs and the current ETR of firm i in year t, respectively. $NED_{i,t}$, $FEMALE_{i,t}$, $DUA_{i,t}$, and $BSIZE_{i,t}$ are the number of non-executive directors of the BoD, the number of female directors, CEO duality and the number of directors of the BoD of firm i in year t, respectively. $Control_{i,t}$ is a vector of the control variables. The variables in equations (4.4) and (4.5) are defined in Table 3.1.

Table 4.9 presents the regression results of equations (4.4) and (4.5) using AETR and CETR as the dependent variable, respectively. Columns (2) and (3) report the regression results of equation (4.4) using the fixed effect and OLS, respectively. The coefficient of NED in column 2 is -0.575 and is significant at the 10% level. This result indicates that, ceteris paribus, AETR is expected to decrease by 0.575% for an additional non-executive appointed to the BoD. Similarly, the coefficient of NED in column 3 (-0.614) is significant at the 1% level. Thus, NED has a significant, negative effect on AETR. In other words, a firm is more likely to engage in more CTA activities (lower AETR) if there are more non-executives on the BoD.

The regression results of equation (4.4) with CETR as the dependent variable using FE and OLS are reported in Table 4.9, columns (4) and (5), respectively. The coefficient of NED in column 4 (-0.693) is significant at the 10% level. This result indicates that, ceteris paribus, CETR is expected to decrease by 0.693% for an additional non-executive appointed to the BoD. The coefficient of NED in column 5 (-0.631) is significant at the 1% level. The negative effect of NED on CETR suggests a positive relationship between NED and CTA. Thus, the results remain consistent with the baseline regression results reported in Table 4.6.

When using AETR and CETR as the dependent variables, the coefficients of DUA became negative and significant in Table 4.9, columns 2 to 5. The coefficient of DUA in column 2 is -1.188 and is significant at the 10% level. This result indicates that AETR is expected to decrease by 1.188%, ceteris paribus, if the CEO is also the Chair of the BoD. This result indicates that CEO duality has a significant, negative effect on ETRs. In other words, firms are more likely to engage in tax avoidance activities if CEO is also the Chair of

Table 4.9   A robustness check using AETR and CETR as alternative proxies for CTA in equations 4.4 and 4.5

VARIABLE	(1) Fixed Effects AETR	(2) OLS AETR	(3) Fixed Effects CETR	(4) OLS CETR
NED	-0.575**	-0.614***	-0.693**	-0.631***
	(0.283)	(0.210)	(0.277)	(0.206)
FEMALE	0.739*	0.224	0.514	0.204
	(0.400)	(0.230)	(0.398)	(0.222)
DUA	-1.188*	-0.936**	-1.959***	-0.896**
	(0.674)	(0.459)	(0.716)	(0.453)
BSIZE	0.0629	0.441*	0.129	0.301
	(0.337)	(0.231)	(0.328)	(0.223)
ROA	-0.434***	-0.399***	-0.419***	-0.385***
	(0.0423)	(0.0344)	(0.0399)	(0.0327)
SIZE	0.418	0.204	0.348	0.127
	(0.629)	(0.173)	(0.664)	(0.159)
LEV	-9.532***	-2.217	-6.727**	-0.844
	(3.162)	(1.994)	(3.177)	(2.172)
PPE	-1.632	-4.876***	-2.934	-5.781***
	(1.827)	(1.057)	(1.876)	(1.099)
INST	-0.00365	-0.00767	-0.0135	-0.0136
	(0.0119)	(0.00979)	(0.0111)	(0.00908)
INTANG	-17.93***	-4.830	-16.62***	-1.920
	(6.579)	(4.960)	(6.367)	(5.060)
AGE	0.0668	0.0196	0.0709	0.0164
	(0.123)	(0.0141)	(0.120)	(0.0139)
FOREIGN	-0.0357	0.00600	-0.00553	0.0151
	(0.0340)	(0.0169)	(0.0305)	(0.0160)
STATE	-0.0481*	0.0186*	-0.0630***	0.0216**
	(0.0259)	(0.0106)	(0.0240)	(0.0102)
Observations	3,309	3,309	3,249	3,249
R-squared	0.053	0.097	0.052	0.102
Industry	YES	YES	YES	YES
Year	YES	YES	YES	YES

Note: This table reports the regression results of the baseline model using AETR and CETR as a dependent variable. We include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.

***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

the BoD. CEO duality has more incentives to engage in CTA activities based on both tax-saving effects and rent extraction effects from CTA. However, I find no significant effect of DUA on BTD and BTD. The effect of FEMALE and BSIZE is insignificant with AETR and CETR as alternative proxies for CTA.

The coefficients of ROA remain significant at the 1% level in Table 4.9, columns 2 to 5. The coefficient of ROA in column 2 is -0.434 indicating that AETR is expected to decrease by 0.434 %, ceteris paribus if ROA

increases by 1%. Likewise, the significantly negative coefficient of ROA in columns 3 to 5 indicates a positive relationship between ROA and CTA.

Endogeneity diagnostics

The FE regression is expected to mitigate the bias of unobserved and time-invariant firm characteristics on predictors that affect the outcome. However, the consistent estimate remains biased if there is a potential endogenous relationship between CTA and firm performance as suggested by Desai and Dhamapala (2009). This bias can be eliminated by estimating the fixed-effects model with instrumental variables. We use 2SLS/IV as an alternative approach to take into account the endogeneity between tax avoidance and profitability and validate the regression results from fixed effects. The results from the first and second stages of 2SLS/IV of our baseline model (equation 4.1) are reported in Tables 4.10 and 4.11, respectively. The Durbin-Wu-Hausman test is carried out to test the endogeneity under the null hypothesis that the endogenous regressors can be treated as exogenous. The test for endogeneity in column 2 (11.186) in Table 4.11 rejects the null hypothesis. Thus, there is the endogenous relationship between CTA and firm performance represented by ROA. The instrumental variable (IV) technique helps to address the endogeneity issue by identifying variables that can explain ROA, but it is not correlated with the error term. Following Poukliakova (2005) I use lag of sales growth (IV1) as an instrument for ROA to eliminate the effects of correlation between ROA and the error term. According to Desmiranti (2019), an increase in sales growth tends to make the company get a higher ROA and, therefore, companies will tend to practice tax avoidance. However, a firm's sales growth does not depend on CTA practices. Similarly, I use the lag of dividend scaled by total assets (IV2) as another instrumental variable for ROA. According to Kanakriyah (2020), under signal theory, dividends are seen as a signal about the corporation to external investors and shareholders about the prospect for profits and their successful performance.

Table 4.10 shows the regression result at the first stage when I regress two instrument variables on ROA. Both the coefficients of IV1 (0.00587) and IV2 (47.62) are significant at the 1% level. The F-test for weak identification and the Sanderson-Windmeijer (SW) first-stage test for under-identification of individual endogenous repressor are reported at the end of Table 4.10. The F-test for the joint significance of the coefficients of IV1 and IV2 is 32.07 which is significant at the 1% level. This result indicates that the null hypothesis of weak identification is rejected. The SW test also rejects the null hypothesis that the particular endogenous regressor in question is unidentified. Thus, our instrumental variables strongly explain the endogenous regressor.

Table 4.10   First stage of 2SLS/IV regression results of the BoD on CTA

(1)	(2)
VARIABLE	First stage- 2SLS/IV
	BTD
IV1	0.00587***
	(0.00184)
IV2	47.62***
	(3.668)
NED	-0.0220
	(0.160)
FEMALE	0.0293
	(0.214)
BSIZE	0.499**
	(0.204)
DUA	-0.854**
	(0.396)
SIZE	1.816***
	(0.348)
LEV	-10.10***
	(1.575)
PPE	3.584***
	(1.039)
INST	-0.00427
	(0.00707)
INTANG	-5.638
	(3.657)
AGE	-0.588**
	(0.282)
FOREIGN	-0.0299
	(0.0194)
STATE	0.00700
	(0.0137)
Observations	2,644
Year	YES
F test for weak identification	32.07***
SW first stage test	64.79***

Note: This table reports the first stage regression results from 2SLS/IV. Lag of sale growth and DIV are instrumental variables for ROA.

***, **, and * denote statistical significance levels of 1 percent, 5 percent and 10 percent, respectively.

Table 4.11 shows 2SLS/IV regression results of the relationship between non-executive directors, female directors, CEO duality and the BoD's size on the level of CTA. The Sargan-Hansen test for overidentifying restrictions is reported at the end of Table 4.11. The test chi-squared statistic (0.337) does not reject the joint null hypothesis that the instrumental variable is valid (uncorrelated with the error term) and excluded instruments are correctly excluded from the estimated equation.

Table 4.11   2SLS/IV regression results of the BoD on CTA (equation 4.1)

(1)	(2)
VARIABLE	2SLS/IV
	BTD
ROA	0.00242***
	(0.000642)
NED	0.00233**
	(0.00101)
FEMALE	-0.00144
	(0.00160)
BSIZE	0.00153
	(0.00155)
DUA	-0.00124
	(0.00341)
SIZE	0.0125***
	(0.00339)
LEV	-0.0319**
	(0.0137)
PPE	0.0292***
	(0.00852)
INST	-4.39e-05
	(5.06e-05)
INTANG	0.0276
	(0.0275)
AGE	-0.00127
	(0.00177)
FOREIGN	-0.000327*
	(0.000195)
STATE	0.000250***
	(8.58e-05)
Observations	2,644
R-squared	0.380
Year	YES
Endogeneity Test	11.186***
	0.337
Hansen J statistic (overidentification test of all instruments)	

Note: This table reports 2SLS/IV regression results of the BoD's characteristics on CTA.
***, **, and * denote statistical significance levels of 1 percent, 5 percent and 10 percent, respectively.

Table 4.11 results are robust to the baseline regression results reported in Table 4.7. The estimated coefficient of NED in column 2 is 0.00242 and is significant at the 1% level. In other words, the significant, positive effect of the number of non-executive directors of the BoD on CTA remains. All estimated coefficients of FEMALE, DUA and BSIZE in column 2 are positive but significant. Additionally, all coefficients

of FOREIGN remain negative and significant at the 10% level. The effect of ROA, SIZE and PPE on CTA also remains positive and significant.

4.3   Corporate tax avoidance and firm value

4.3.1   Regression results

To observe the effect of the CTA on firm value, I estimate the following specification:

$$Q_{i,t} = \nu_0 + \nu_1 * Q_{i,t-1} + \nu_2 * BTD_{i,t} + \nu_3 * Control_{i,t} + Industry + Year + \varepsilon_{6i,t} \qquad (4.6)$$

where: $Q_{i,t}$ is Tobin's q of firm i in year t; $BTD_{i,t}$ is the book-tax difference calculated by Frank et al. (2009). $Control_{i,t}$ is a vector of the control variables. The variables in equation (4.6) are defined in Table 3.2.

Pre-estimation diagnostic tests are reported in Table 4.12. The F-test chi-squared statistic rejects the null hypothesis of the jointly equal-to-zero of all estimated specific intercept. The Hausman test shows that the individual effects are correlated with other repressors in the model as the null hypothesis is rejected. Thus, we use the fixed-effect (FE) estimator to control for the time-invariant effects in the sample.

Additionally, the Breusch and Pagan test for heteroscedasticity in panel data is conducted. The test statistic rejects the null hypotheses at the 1% level, suggesting that there is heteroskedasticity in the sample. Therefore, standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. To control for the existence of the unobservable industry- and year-specific confounding factors, I add a set of industry and year dummies to the baseline model. I also perform a Paris-Winsten regression to estimate the baseline model under the assumption that the residuals are serially correlated.

Table 4.12   Pre-estimation diagnostic test results

F-test, null hypothesis: at least one group/time-specific intercept is not zero	
F-statistic	466.12***
Hausman test, null hypothesis: individual effects are uncorrelated with any repressor in the model	
Chi-squared	1318.03***
Breusch-Pagan test, null hypothesis: homoscedasticity	
Chi-squared	1601.84***

Source: Author's calculations.

Table 4.13   Baseline regression results from equation 4.6

(1)	(2)	(3)	(4)
VARIABLE	Fixed Effects/ Q	OLS/ Q	Paris-Winsten/ Q
L.Q	0.304***	0.719***	0.716***
	(0.0422)	(0.0138)	(0.0138)
BTD	0.566***	0.324**	0.328**
	(0.200)	(0.136)	(0.137)
GROWTH	0.000318**	0.000304***	0.000302***
	(0.000142)	(0.000100)	(0.000100)
DIV	1.953***	2.074***	2.088***
	(0.316)	(0.139)	(0.140)
INST	0.000443	0.000383	0.000387
	(0.000379)	(0.000251)	(0.000252)
STATE	-0.000834	0.000119	0.000121
	(0.000582)	(0.000249)	(0.000251)
FOREIGN	0.00150	0.00117***	0.00119***
	(0.00117)	(0.000444)	(0.000447)
SIZE	-0.00706	0.00679	0.00689
	(0.0400)	(0.00443)	(0.00446)
LEV	0.238*	0.0631	0.0637
	(0.124)	(0.0566)	(0.0569)
PPE	-0.141	-0.0257	-0.0259
	(0.0890)	(0.0297)	(0.0299)
AGE	-0.0185	0.000497	0.000501
	(0.0162)	(0.000376)	(0.000379)
RISK	-0.0526**	-0.0385**	-0.0387**
	(0.0236)	(0.0191)	(0.0192)
DIS_ACC	-0.138***	-0.207***	-0.207***
	(0.0457)	(0.0343)	(0.0343)
INTANG	-0.0450	0.150	0.151
	(0.370)	(0.156)	(0.157)
R-squared	0.205	0.727	0.723
F-test	14.08***	221.89***	217.66***
Industry	YES	YES	YES
Year	YES	YES	YES

Note: This table reports the regression results of the baseline model. Columns 2, 3 and 4 report the fixed effect, OLS and Paris-Winsten estimation, respectively. We include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.

***, **, and * denote statistical significance levels of 1 percent, 5 percent and 10 percent, respectively.

Table 4.13 reports the regression results of our baseline model (equation 4.6) which presents the effect of CTA on firm value of Vietnamese non-financial listed firm. Table 4.13, columns (2), (3) and (4) present the results using the fixed effect, OLS and Paris-Winsten estimation, respectively. The estimated

coefficient of the lagged dependent variable (L.Q) is significant at the 1% level in all three estimators. These results indicate the dynamic nature of panel data when a firm's past value significantly affects its current value.

The coefficient of BTD is positive in all columns in Table 4.13. In particular, the BTD's coefficient in column 2 is 0.566 and significant at the 1% level. This result indicates that for a one-unit increase in BTD, ceteris paribus, Tobin's q is expected to increase by 0.566. Likewise, the coefficients of BTD in columns 3 (0.324) and 4 (0.328) are significant at the 5% level. As the coefficients are consistently positive and significant, I conclude that my results are robust to different model specifications and are not driven by serial correlation. These results suggest that CTA can enhance firm value in Vietnamese non-financial listed firms. The result corroborates the arguments of Ayers et al. (2011) that tax savings of CTA can benefit stockholders. Our result is consistent with Ariff and Hashim (2014) who show a positive effect of CTA on firm value in Malaysia, a developing market. However, our result does not support Santa and Rezende (2016) who show that investors are concerned about the risks of CTA and rent extraction from tax avoidance activities and thus decrease their stock return expectations in a firm with a high level of CTA.

I also find all the coefficients of GROWTH and DIV are significant and positive in all columns of Table 4.6. RISK and DIS_ACC negatively affect firm value in Vietnamese non-financial listed firms.

4.3.2 Robustness check

Alternative proxies of firm value

Based on Desai and Dharmapala (2009), I use the market value of equity scaled by lagged total assets as a proxy of Tobin's q to check the robustness of my regression results. I use equation (4.7) to examine the effect of CTA on market value:

$$MV_{i,t} = \kappa_0 + \kappa_1 * MV_{i,t-1} + \kappa_2 * BTD_{i,t} + \kappa_3 * Control_{i,t} + Industry + Year + \varepsilon_{7i,t} \qquad (4.7)$$

where: $MV_{i,t}$ is the market value of equity of firm i in year t; $BTD_{i,t}$ is the book-tax difference calculated by Frank, Lynch and Rego (2009). $Control_{i,t}$ is a vector of the control variables. The variables in equation (4.7) are defined in Table 3.2.

Table 4.14 presents the regression results of equation (4.7) using MV as the dependent variable. Columns (2), (3) and (4) report the regression results on the effect of BTD on MV using the fixed effect, OLS and

Paris-Winsten estimations, respectively. Consistent with the results reported in Table 4.13, the positive, significant coefficients of BTD remain. In particular, BTD's coefficient in column 2 is 1.349 and significant at the 1% level. This result indicates that, for a one-unit increase in BTD, ceteris paribus, MV is expected to increase by 1.349. The coefficients of BTD in columns 3 (1.194) and 4 (1.062) are significant at the 1% level.

Alternative measures of corporate tax avoidance

The coefficients of GROWTH and DIV remain positive and significant in all columns. However, the coefficients of RISK and DIS_ACC are inconsistent and insignificant.

To check the robustness of my regression results (equation 4.6), I alternatively regress Tobin's q and MV on the aforementioned proxy of CTA as the variable-of-interest and the same set of control variables as in my baseline model. I use equations (4.8) to (4.15) to examine the effect of CTA on firm value.

$$Q_{i,t} = \delta_0 + \delta_1 * Q_{i,t-1} + \delta_2 * DBTD_{i,t} + \delta_3 * Control_{i,t} + Industry + Year + \varepsilon_{8i,t} \qquad (4.8)$$

$$Q_{i,t} = \delta_{01} + \delta_{11} * Q_{i,t-1} + \delta_{21} * PBTD_{i,t} + \delta_{31} * Control_{i,t} + Industry + Year + \varepsilon_{9i,t} \qquad (4.9)$$

$$Q_{i,t} = \delta_{02} + \delta_{12} * Q_{i,t-1} + \delta_{22} * AETR_{i,t} + \delta_{32} * Control_{i,t} + Industry + Year + \varepsilon_{10i,t} \qquad (4.10)$$

$$Q_{i,t} = \delta_{03} + \delta_{13} * Q_{i,t-1} + \delta_{23} * CETR_{i,t} + \delta_{33} * Control_{i,t} + Industry + Year + \varepsilon_{11i,t} \qquad (4.11)$$

$$MV_{i,t} = \theta_0 + \theta_1 * MV_{i,t-1} + \theta_2 * DBTD_{i,t} + \theta_3 * Control_{i,t} + Industry + Year + \varepsilon_{12i,t} \qquad (4.12)$$

$$MV_{i,t} = \theta_{01} + \theta_{11} * MV_{i,t-1} + \theta_{21} * PBTD_{i,t} + \theta_{31} * Control_{i,t} + Industry + Year + \varepsilon_{13i,t} \qquad (4.13)$$

$$MV_{i,t} = \theta_{02} + \theta_{12} * MV_{i,t-1} + \theta_{22} * AETR_{i,t} + \theta_{32} * Control_{i,t} + Industry + Year + \varepsilon_{14i,t} \qquad (4.14)$$

$$MV_{i,t} = \theta_{03} + \theta_{13} * MV_{i,t-1} + \theta_{23} * CETR_{i,t} + \theta_{33} * Control_{i,t} + Industry + Year + \varepsilon_{15i,t} \qquad (4.15)$$

where: $Q_{i,t}$, $MV_{i,t}$, $DBTD_{i,t}$, $PBTD_{i,t}$, $AETR_{i,t}$ and $CETR_{i,t}$ are Tobin's q, market value, discretionary book-tax difference, permanent book-tax difference, accounting ETR and the current ETR of firm i in year t, respectively. $Control_{i,t}$ is a vector of the control variables. The variables in equations (4.8) to (4.15) are defined in Table 3.2.

Table 4.15 presents the regression results of our robustness tests using the alternative proxies for CTA and Tobin's q. Columns 2 to 5 report the regression results of equations (4.8) to (4.11) using DBTD, PBTD, AETR and CETR as the variable-of-interest, respectively. The coefficients of DBTD in column 2 are positive and significant at the 5% level. This result indicates that if DBTD increases by one percent, ceteris paribus, Tobin's q increases by 0.465 percent. Likewise, the coefficient of PBTD in column 3 remains positive and

Table 4.14   Robustness check the market value of equity (MV) as an alternative proxy for firm value (equation 4.7)

(1) VARIABLES	(2) Fixed Effects MV	(3) OLS MV	(4) Paris-Winsten MV
L.MV	0.150***	0.533***	0.0238
	(0.0369)	(0.0147)	(0.0165)
BTD	1.349***	1.194***	1.062***
	(0.320)	(0.202)	(0.208)
GROWTH	0.00122***	0.00138***	0.00115***
	(0.0241)	(0.0149)	(0.0126)
DIV	1.955***	2.779***	2.830***
	(0.452)	(0.195)	(0.240)
INST	-2.53e-05	0.000637*	0.000433
	(0.000597)	(0.000372)	(0.000523)
STATE	-0.000887	-0.000425	-0.000684
	(0.000952)	(0.000371)	(0.000680)
FOREIGN	0.000752	0.00187***	0.00434***
	(0.00205)	(0.000655)	(0.00116)
SIZE	0.0587	0.0158**	0.0564***
	(0.0517)	(0.00663)	(0.0127)
LEV	0.811***	0.292***	0.598***
	(0.200)	(0.0843)	(0.116)
PPE	0.912***	0.387***	0.915***
	(0.137)	(0.0448)	(0.0670)
AGE	-0.0448*	0.00125**	0.00109
	(0.0267)	(0.000559)	(0.00117)
RISK	-0.0169	-0.0124	-0.0231
	(0.0310)	(0.0285)	(0.0313)
DIS_ACC	0.377***	0.435***	0.395***
	(0.0870)	(0.0511)	(0.0421)
INTANG	0.881*	0.801***	2.043***
	(0.489)	(0.234)	(0.284)
Observations	2,602	2,602	2,602
R-squared	0.319	0.639	0.393
Industry	YES	YES	YES
Year	YES	YES	YES

Note: This table reports the regression results of the baseline model using MV as dependent variables. Columns 2, 3 and 4 report the fixed effect, OLS and Paris-Winsten estimation, respectively. We include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. ***, **, and * denote statistical significance levels of 1 percent, 5 percent and 10 percent, respectively.

significant at the 5% level, indicating an increase of 0.477 percent in Tobin's q if PBTD increases by one percent.

Table 4.15   Robustness check using alternative proxies of CTA and Tobin's q in equations 4.8 to 4.11

(1) VARIABLE	(2) Fixed Effects/Q	(3) Fixed Effects/Q	(4) Fixed Effects/Q	(5) Fixed Effects/Q
L.Q	0.304***	0.311***	0.388***	0.398***
	(0.0423)	(0.0428)	(0.0357)	(0.0351)
DBTD	0.465**			
	(0.190)			
PBTD		0.477**		
		(0.188)		
AETR			-0.000770**	
			(0.000356)	
CETR				-0.000694**
				(0.000315)
GROWTH	0.000337**	0.000335**	0.000312**	0.000300**
	(0.000143)	(0.000148)	(0.000124)	(0.000126)
DIV	1.964***	1.853***	2.163***	2.064***
	(0.317)	(0.311)	(0.259)	(0.253)
INST	0.000440	0.000470	0.000500	0.000572*
	(0.000381)	(0.000379)	(0.000313)	(0.000302)
STATE	-0.000811	-0.000674	-0.00119**	-0.00112**
	(0.000582)	(0.000584)	(0.000531)	(0.000518)
FOREIGN	0.00146	0.00137	0.000821	0.000798
	(0.00117)	(0.00120)	(0.00101)	(0.000942)
SIZE	-0.00639	-0.00973	0.0293	0.0242
	(0.0400)	(0.0413)	(0.0284)	(0.0276)
LEV	0.234*	0.238*	0.151	0.155
	(0.124)	(0.124)	(0.106)	(0.101)
PPE	-0.137	-0.142	-0.0637	-0.0499
	(0.0892)	(0.0898)	(0.0695)	(0.0681)
AGE	-0.0237	-0.0187	-0.00413	-0.00289
	(0.0160)	(0.0162)	(0.00373)	(0.00367)
RISK	-0.0526**	-0.0533**	-0.0316	-0.0298
	(0.0236)	(0.0238)	(0.0207)	(0.0204)
DIS_ACC	-0.102**	-0.110**	-0.118***	-0.112***
	(0.0428)	(0.0436)	(0.0375)	(0.0342)
INTANG	-0.0395	-0.0474	0.0560	0.0644
	(0.369)	(0.370)	(0.255)	(0.241)
Observations	2,613	2,583	3,145	3,243
R-squared	0.204	0.204	0.325	0.325
Industry	YES	YES	YES	YES
Year	YES	YES	YES	YES

Note: This table reports the regression results of equations 4.8 to 4.11 using Tobin's q as the dependent variable. I include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.

 ***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

Table 4.16   Robustness check using alternative proxies of CTA and MV in equations 4.12 to 4.15

VARIABLE	Fixed Effects MV	Fixed Effects MV	Fixed Effects MV	Fixed Effects MV
L.MV	0.149***	0.154***	0.236***	0.236***
	(0.0370)	(0.0373)	(0.0338)	(0.0331)
DBTD	1.220***			
	(0.308)			
PBTD		1.280***		
		(0.312)		
AETR			-0.00105*	
			(0.000603)	
CETR				-0.00134***
				(0.000518)
GROWTH	0.00125***	0.00122***	0.00132***	0.00120***
	(0.000240)	(0.000251)	(0.000241)	(0.000230)
DIV	1.972***	1.859***	2.310***	2.224***
	(0.453)	(0.453)	(0.351)	(0.346)
INST	-1.75e-05	6.82e-06	-8.13e-05	0.000129
	(0.000599)	(0.000599)	(0.000448)	(0.000447)
STATE	-0.000867	-0.000714	-0.000334	-0.000535
	(0.000953)	(0.000963)	(0.000924)	(0.000906)
FOREIGN	0.000692	0.000421	0.000251	0.000483
	(0.00205)	(0.00212)	(0.00154)	(0.00143)
SIZE	0.0592	0.0500	0.0890**	0.0925**
	(0.0518)	(0.0534)	(0.0392)	(0.0381)
LEV	0.807***	0.819***	0.557***	0.570***
	(0.201)	(0.203)	(0.172)	(0.167)
PPE	0.917***	0.904***	0.860***	0.873***
	(0.138)	(0.138)	(0.121)	(0.119)
AGE	-0.0571**	-0.0438	-0.00790	-0.00849
	(0.0259)	(0.0269)	(0.00544)	(0.00530)
RISK	-0.0165	-0.0171	-0.00662	-0.00938
	(0.0310)	(0.0313)	(0.0283)	(0.0273)
DIS_ACC	0.466***	0.406***	0.444***	0.446***
	(0.0824)	(0.0885)	(0.0757)	(0.0716)
INTANG	0.893*	0.876*	1.128***	1.064***
	(0.488)	(0.487)	(0.407)	(0.380)
R-squared	0.318	0.313	0.357	0.363
Industry	YES	YES	YES	YES
Year	YES	YES	YES	YES

Note: This table reports the regression results of equations 4.8 to 4.11 using MV as the dependent variable. We include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.   ***, **, and * denote statistical significance levels of 1 percent, 5 percent and 10 percent, respectively.

Despite the small magnitude, both coefficients of AETR and CETR are negative and significant at the 1% level in column 4 and the 5% level in column 5, respectively. The coefficient of AETR in column 4 means that Tobin's q is expected to decrease by 0.077 percent of lagged total assets if AETR increases by one percent. The coefficient of CETR in column 5 indicates that for a one-percent increase in CETR, ceteris paribus, Tobin's q is expected to decrease by 0.0694 percent of lagged total assets. The negative coefficients of AETR and CETR mean that a firm with lower ETRs (higher level of CTA) is more likely to have higher Tobin's q. Thus, I can conclude that CTA positively affects Tobin's q of Vietnamese non-financial listed firms.

Using the same estimators and control variables, we regress MV on DBTD, PBTD, AETR and CETR (equations 4.12 to 4.15) and report the results in Table 4.16, columns 2 to 5, respectively.

All coefficients of DBTD, PBTD AETR and CETR are significant in Table 4.16, columns 2 to 5. Both the coefficient of DBTD in column 2 and PBTD in column 3 are positive and significant at the 1% level. This result indicates that ceteris paribus, MV is expected to increase by 1.22% for a one-percent increase in DBTD. MV is expected to increase by 1.28%, ceteris paribus, if PBTD increases by one-percent. Both coefficients of AETR in column 4 and CETR in column 5 are negative and significant at the 10% and 1% levels, respectively. The coefficient of AETR in column 4 means that ceteris paribus, MV is expected to decrease by 0.157% of lagged total assets for a one-percent increase in AETR. The coefficient of CETR in column 5 indicates that, for a one-percent increase in CETR, ceteris paribus, MV is expected to decrease by 0.134% of lagged total assets. The higher the AETR, the lower the level of CTA a firm uses, thus the results show a positive relationship between CTA and firm value measured by MV. Collectively, the significantly positive relationship between CTA and firm value still hold after using different proxies for the CTA and firm value of Vietnamese non-financial listed firms.

Endogeneity diagnostics

The presence of the lag dependent variables leads to endogeneity problems and, hence, the fixed-effect model might be biased. There is also a potential endogenous relationship between CTA and firm performance as discussed in the previous section. To deal with the endogeneity of the CTA-firm value relationship and the dynamic panel bias arising from the correlation between firm-level unobserved heterogeneity in the error term and the lagged value of the dependent variable, the system-GMM estimation method for panel data is used to evaluate the impact of CTA on Tobin's q.

Table 4.17   A robustness check using alternative proxies for CTA and the system-GMM estimation method with equations 4.6 and 4.8 to 4.11

VARIABLE	system-GMM/ Q	system-GMM/ Q	system-GMM/ Q	system-GMM/ Q	system-GMM/ Q
L.Q	0.708***	0.717***	0.716***	0.712***	0.701***
	(0.0697)	(0.0711)	(0.0716)	(0.0695)	(0.0726)
BTD	0.952***				
	(0.364)				
DBTD		0.679**			
		(0.344)			
PBTD			0.665**		
			(0.330)		
AETR				-0.00118***	
				(0.000440)	
CETR					-0.00132***
					(0.000474)
SIZE	0.00276	0.00407	0.00455	0.00851	0.00790
	(0.00802)	(0.00799)	(0.00828)	(0.00732)	(0.00724)
GROWTH	0.000172	0.000206	0.000234*	0.000272**	0.000291**
	(0.000138)	(0.000139)	(0.000141)	(0.000122)	(0.000121)
DIV	1.859***	1.868***	1.815***	1.831***	1.807***
	(0.340)	(0.346)	(0.350)	(0.301)	(0.301)
INST	0.000355	0.000384	0.000433	0.000486*	0.000499*
	(0.000285)	(0.000285)	(0.000285)	(0.000275)	(0.000273)
STATE	-0.000195	-0.000180	-0.000204	-0.000310	-0.000265
	(0.000265)	(0.000266)	(0.000256)	(0.000251)	(0.000247)
FOREIGN	0.00120	0.00116	0.00108	0.000549	0.000668
	(0.000796)	(0.000802)	(0.000796)	(0.000784)	(0.000806)
LEV	0.107	0.0887	0.0910	0.0972	0.0919
	(0.0904)	(0.0898)	(0.0906)	(0.0779)	(0.0749)
PPE	-0.0612	-0.0510	-0.0531	-0.0285	-0.0269
	(0.0445)	(0.0443)	(0.0446)	(0.0391)	(0.0382)
AGE	0.000915*	0.000870*	0.000946*	0.00108**	0.00108**
	(0.000477)	(0.000479)	(0.000485)	(0.000484)	(0.000487)
RISK	-0.0422*	-0.0474**	-0.0420*	-0.0306	-0.0287
	(0.0221)	(0.0221)	(0.0226)	(0.0199)	(0.0197)
DIS_ACC	-0.213***	-0.156***	-0.185***	-0.120***	-0.126***
	(0.0576)	(0.0503)	(0.0523)	(0.0437)	(0.0400)
INTANG	0.107	0.156	0.0993	0.280	0.279
	(0.297)	(0.293)	(0.295)	(0.220)	(0.212)
No of firms	513	513	512	513	512
Year	YES	YES	YES	YES	YES
No of instruments	34	34	34	34	34
AR1 (p-value)	4.50e-05	4.42e-05	0.000101	3.30e-05	1.40e-05
AR2 (p-value)	0.557	0.531	0.419	0.820	0.731
Hansen-J (p-value)	0.555	0.416	0.516	0.593	0.469

Note: This table reports the regression results of the baseline model (equations 4.6, and 4.8 to 4.11) using alternative proxies for CTA and firm value and system-GMM. Estimation is carried out through a two-step system-GMM, robust standard errors are corrected for finite sample bias. All instruments are collapsed. Forward-orthogonal-deviation is applied in transforming variables for differences equation. Year dummies are included in all models but not reported. ***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

As discussed in chapter 3, the instruments are valid if there is no autocorrelation in the first–differenced error term and the group of instruments is exogenous. First, the Arellano and Bond (1991) test is used to test the serial correlation, including first-order (AR (1)) and second-order autocorrelation (AR (2)). The null hypothesis is expected to be rejected for the test of the first-order autocorrelation. If the null hypothesis is not rejected for second-order autocorrelation, lags of the second or further could be instruments. Second, the Hansen test is used to test the validity of over-identifying restrictions. The validity of subsets of instruments (IV- style and GMM- style) are performed by the Difference-in-Hansen test. The null hypothesis that instruments as a group are exogenous is expected not to be rejected.

The system GMM regression results of equations (4.6), and (4.8) to (4.11), are reported in Table 4.17. I use a set of internal instruments including the lagged levels and lagged differences of firm value, CTA, and control variables to remove firm-level unobserved heterogeneity in the error term in the first difference equations and make them orthogonal to the error term. Table 4.17 shows there is no autocorrelation in the first differenced error term because the AR (1) test shows p-values less than the 1% significance level. However, the AR (2) test shows that there is a second-order serial correlation in the differences of the residuals. Thus, instruments from the lag 2 periods of Tobin's q are appropriate instruments for the endogenous variable. Instruments for L.Q in system-GMM regression are lags 2 to 10 periods of Q and collapsed. I also treat the proxies of CTA as endogenous variables. Instruments for endogenous variables are lags 1 to 2 periods for BTD, PBTD, DBTD, AETR and CETR in equations (4.6), (4.8) to (4.11), respectively. The larger-than-0.1 p-values of all Hansen tests for over-identifying instruments indicate that a group of instruments is exogenous. In addition, the number of instruments is smaller than the number of groups, thus the possible problem of too many instruments is less likely to arise. All the coefficients of L.Q in the system-GMM estimate also lie between the FE and OLS estimate as we expected. Thus, as suggested by Bond (2002), the estimate of L.Q using system-GMM is more efficient

Table 4.18 presents the Difference-in-Hansen tests for the exogeneity of instrument subsets, including GMM-style instruments for levels and IV-style instruments. The p-values of the Difference-in-Hansen tests in the six models are larger than the 1% significance level for all subsets of instruments and thus support the exogeneity of instrumental variables. In addition, the possible problem of too many instruments is less likely to arise because the number of instruments is smaller than the number of groups (Roodman, 2009). In sum, all post-estimation specification tests strongly support the validity of the system-GMM models.

Table 4.18   The results of the difference-in-Hansen tests for exogeneity of instruments

Instrument	Equation 4.6	Equation 4.8	Equation 4.9	Equation 4.10	Equation 4.11
GMM instruments for levels	0.281	0.246	0.191	0.235	0.191
Lag 2 to 8 periods of Q	0.506	0.362	0.407	0.418	0.407
Lag 1 or 2 periods of proxies for CTA	0.451	0.214	0.782	0.511	0.782
DIV	0.862	0.531	0.726	0.757	0.726
GROWTH	0.169	0.108	0.233	0.521	0.233
INST	0.248	0.178	0.973	0.907	0.973
STATE	0.611	0.207	0.310	0.293	0.310
FOREIGN	0.163	0.114	0.297	0.266	0.297
SIZE	0.774	0.920	0.257	0.490	0.257
LEV	0.361	0.183	0.536	0.600	0.536
PPE	0.398	0.498	0.837	0.885	0.837
AGE	0.402	0.454	0.221	0.155	0.221
RISK	0.358	0.366	0.215	0.160	0.215
DIS_ACC	0.570	0.147	0.940	0.800	0.940
INTANG	0.238	0.136	0.293	0.510	0.293
2010 to 2018	0.612	0.933	0.458	0.589	0.458

Notes: This table reports the value of the difference-in-Hansen test for instruments used in system-GMM regression of equations 4.6, and 4.8 to 4.11 for alternative proxies for CTA and Tobin's q. I use Lags of 2 to 8 periods of Q and lags of 1 to 2 periods of proxies of CTA. Estimation is carried out using a two-step system-GMM, robust standard errors are corrected for finite sample bias. All instruments are collapsed. Forward-orthogonal-deviation is applied in transforming variables for differences equation.

The results in Table 4.17 are robust to the baseline regression results reported in Table 4.13. I regress Q on the same set of control variables and alternative proxies for CTA, BTD, DBTD and PBTD, and report the results in Table 4.17, columns 2 to 4, respectively. Though the positive coefficient of BTD (0.952) in column 2 is significant at the 1% level, the coefficients of both DBTD (0.679) in column 3 and PBTD (0.665) are significant at the 5% level. Columns 4 and 5 present the regression results of equations (4.8) and (4.9). Despite small magnitude, the estimated coefficients of both AETR (-0.00166) and CETR (-0.00132) are negative and significant at the 1% level. The result indicates that a firm with a higher level of CTA (lower AETR or CETR) is more likely to have a higher firm value measured by Tobin's q.

4.4 The Board of Directors and the valuation implication of corporate tax avoidance

4.4.1 Non-executive directors of the BoD and the CTA-firm value relationship

Based on the argument that non-executive directors are expected to monitor management more independently if agency conflicts between stockholders and managers arise, and protect shareholder wealth (Lannis & Richarson, 2011), I use the number of non-executive directors on the BoD (NED) to represent the independence of the BoD. I generate the interaction term between BTD and NED (BTD*NED) and then include BTD*NED and NED into my model to further analyse the effect of non-executive members of the BoD on the valuation implication of CTA. I use equations (4.16) and (4.17) to investigate the joint effect of BTD and NED on firm value represented by Tobin's q and market value, respectively.

$$Q_{i,t} = \varphi_0 + \varphi_1 * Q_{i,t-1} + \varphi_2 * BTD_{i,t} * NED_{i,t} + \varphi_3 * BTD_{i,t} + \varphi_4 NED + \varphi_5 * Control_{i,t} + Industry + Year + \varepsilon_{16i,t} \quad (4.16)$$

$$MV_{i,t} = \varphi_{01} + \varphi_{11} * MV_{i,t-1} + \varphi_{21} * BTD_{i,t} * NED_{i,t} + \varphi_{31} * BTD_{i,t} + \varphi_{41} NED + \varphi_5 * Control_{i,t} + Industry + Year + \varepsilon_{17i,t} \quad (4.17)$$

where: $Q_{i,t}$, and $MV_{i,t}$ are Tobin's q and market value of equity of firm i in year t; $BTD_{i,t}$ is the book-tax difference of firm I in year t; $NED_{i,t}$ is the number of non-executive of the BoD of firm i in year t; $BTD_{i,t} * NED_{i,t}$, is the interaction term between book-tax difference and number of non-executive directors on the BoD; and $Control_{i,t}$ is a vector of the control variables. The variables in equations (4.16) and (4.17) are presented in Table 3.2.

Table 4.19 reports the regression results of the joint effect of non-executive directors of the BoD on the CTA-firm value relationship. The FE regression result of the interaction effect between NED and BTD on Tobin's q is shown in Table 4.19, column 2. The positive coefficient of BTD*NED is 0.219 in column 2which is significant at the 10% level. Though the coefficient of BTD becomes negative, the coefficient of NED is positive. Thus, the significantly positive joint coefficient of BTD and NED can be interpreted that, on average, the negative effect of a one-percent increase in BTD on Tobin's mitigates by 0.219 percent for an additional non-executive member appointed to the BoD, ceteris paribus. In other words, non-executive directors can enhance firm value by mitigating rent extraction effects from tax avoidance activities. This result is consistent with Lannis and Richarson (2011) and Minnick and Noga (2010) that dominance of outsiders or non-executive directors on the BoD can monitor managerial actions and strengthen the independence of the BoD to protect stockholders' interests in terms of CTA. However, my results must be interpreted with caution because of the insignificance of the coefficients of both NED and BTD.

Table 4.19   The effect of non-executive directors of the Board of Directors on the relationship between CTA and firm value in equations 4.16 and 4.17

(1) VARIABLE	(2) Fixed Effects/ Q	(3) Fixed Effects/ MV
L.Q	0.301***	
	(0.0428)	
L.MV		0.147***
		(0.0368)
BTD	-0.173	-0.656
	(0.414)	(0.551)
NED	0.000403	-0.00823
	(0.00736)	(0.0105)
BTD*NED	0.219*	0.580***
	(0.121)	(0.156)
SIZE	0.000905	0.0704
	(0.0413)	(0.0532)
GROWTH	0.000329**	0.00123***
	(0.000146)	(0.000253)
DIV	1.986***	1.989***
	(0.318)	(0.451)
INST	0.000470	0.000116
	(0.000385)	(0.000604)
STATE	-0.000950	-0.000932
	(0.000594)	(0.000983)
FOREIGN	0.00200*	0.00120
	(0.00117)	(0.00210)
LEV	0.231*	0.804***
	(0.125)	(0.204)
PPE	-0.148	0.899***
	(0.0915)	(0.140)
AGE	-0.0211	-0.0505*
	(0.0160)	(0.0266)
RISK	-0.0489**	-0.0170
	(0.0235)	(0.0316)
DIS_ACC	-0.129***	0.378***
	(0.0466)	(0.0889)
INTANG	-0.0843	0.827*
	(0.372)	(0.494)
Observations	2,554	2,543
R-squared	0.210	0.327
Industry	YES	YES
Year	YES	YES

Note: This table reports the regression of firm value proxies on the interaction terms BTD*NED. NED is the number of non-executive directors on the BoD. I include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.
***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

I regress BTD*NED on MV as an alternative proxy for firm value and report the regression results in Table 4.17, column 3. The coefficient of BTD*NED (0.580) is significant at the 1% level, but the coefficients of both BTD and NED are negative and insignificant.

Collectively, although there is evidence of positive joint effects between non-executive directors of the BoD and BTD on firm value measured by Tobin's q and MV, the main effects of BTD and NED are inconsistent and insignificant for different proxies of firm value.

4.4.2 Female representation on the BoD and CTA-firm value relationship

According to Adams and Ferreira (2009), the effect of the female members on the BoD is similar to the effect of independent members on the BoD proposed in governance theory. Female members are more likely to be independent, thus enhance the effectiveness of the BoD in controlling rent extraction from CTA. I use the number of female directors on the BoD (FEMALE) as another characteristic of the BoD to examine the moderation role of BoD on the CTA-firm value relationship. I generate the interaction term between BTD and FEMALE (BTD*FEMALE) and include BTD*FEMALE and FEMALE in my model to further analyse the effect of female representation on the BoD on the valuation implications of CTA. I use equations (4.18) and (4.19) to investigate the joint effect of BTD and FEMALE on firm value, represented by Tobin's q and market value, respectively.

$$Q_{i,t} = \tau_0 + \tau_1 * Q_{i,t-1} + \tau_2 * BTD_{i,t} * FEMALE_{i,t} + \tau_3 BTD_{i,t} + \tau_4 FEMALE_{i,t} + \tau_5 * Control_{i,t} + Industry + Year + \varepsilon_{18i,t} \tag{4.18}$$

$$MV_{i,t} = \tau_{01} + \tau_{11} * MV_{i,t-1} + \tau_{21} * BTD_{i,t} * FEMALE_{i,t} + \tau_{31} BTD_{i,t} + \tau_{41} FEMALE_{i,t} + \tau_{51} * Control_{i,t} + Industry + Year + \varepsilon_{19i,t} \tag{4.19}$$

where: $Q_{i,t}$, and $MV_{i,t}$ are Tobin's q and market value of equity of firm i in year t; $BTD_{i,t}$ is the book-tax difference of firm I in year t; $FEMALE_{i,t}$ is the number of female directors of the BoD of firm i in year t; and $BTD_{i,t} * FEMALE_{i,t}$, is the interaction term between book-tax difference and number of non-executive directors on the BoD. $Control_{i,t}$ is a vector of the control variables. The variables in equations (4.18) to (4.19) are presented in Table 3.2.

Table 4.20   The effect of female directors of the BoD on the relationship between CTA and firm value in equations 4.18 and 4.19

(1)	(2)	(3)
VARIABLE	Fixed Effects/ Q	Fixed Effects/ MV
L.Q	0.301***	
	(0.0425)	
L.MV		0.150***
		(0.0370)
BTD	0.227	0.841**
	(0.224)	(0.367)
FEMALE	0.00159	0.00849
	(0.0119)	(0.0199)
BTD*FEMALE	0.467**	0.677**
	(0.181)	(0.330)
SIZE	-0.00247	0.0628
	(0.0414)	(0.0537)
GROWTH	0.000320**	0.00123***
	(0.000146)	(0.000252)
DIV	1.982***	1.974***
	(0.319)	(0.456)
INST	0.000364	-0.000110
	(0.000379)	(0.000602)
STATE	-0.000965	-0.000845
	(0.000603)	(0.00100)
FOREIGN	0.00172	0.000746
	(0.00117)	(0.00210)
LEV	0.229*	0.802***
	(0.125)	(0.203)
PPE	-0.135	0.926***
	(0.0905)	(0.140)
AGE	-0.0188	-0.0451*
	(0.0165)	(0.0270)
RISK	-0.0497**	-0.0143
	(0.0234)	(0.0315)
DIS_ACC	-0.124***	0.390***
	(0.0465)	(0.0892)
INTANG	-0.0684	0.856*
	(0.370)	(0.492)
Observations	2,558	2,547
R-squared	0.212	0.325
Industry	YES	YES
Year	YES	YES

Note: This table reports the regression of firm value proxies on the interaction terms BTD*FEMALE. FEMALE is the number of female directors on the BoD. I include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.
***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

Table 4.20 reports the regression results of the mediation effect of female directors on the CTA-firm value relationship. Table 4.20, Column 2, shows the regression results of the joint effect of FEMALE and BTD on Tobins' q. The coefficient of BTD*FEMALE in column 2 is 0.467, which is significant at the 5% level. The coefficients of both FEMALE (0.00159) and BTD (0.227) are positive. Thus, the significant coefficient of BTD*FEMALE indicates that FEMALE can intensify the BTD-Tobin's q relationship. However, my results should be interpreted with caution because of the insignificance of the effect of BTD and FEMALE on Tobin's q.

Table 4.20, column 3 reports the regression results of the joint effect of FEMALE and BTD on MV. The estimated coefficients of both BTD*FEMALE (0.677) and BTD (0.841) are significant at the 5% level. These results indicate that, on average, the effect of a one-percent increase in BTD on MV increases by 0.841 percent for an additional non-executive member appointed to the BoD, ceteris paribus. However, the coefficient of FEMALE (0.00849) is positive and insignificant indicating that female directors do not have any statistically significant effect on firm value.

Our results show evidence of the mediation effect of female directors on the CTA- firm value relationship. Despite the insignificant direct effect of female directors on firm value, female directors of the BoD can intensify the positive effect of BTD on firm value. Consistent with Richardson et al. (2016), my results suggest that female members are more likely to be independent, which enhances the effectiveness of the BoD in monitoring agency conflicts between shareholders and managers in terms of the tax planning strategy and enhancing the tax-saving effect of CTA.

4.4.3 CEO duality and CTA-firm value relationship

Given the argument that separation of the Chair of the BoD could contribute to an effective monitoring mechanism over management performance (Jensen, 1993), I examine the effect of CEO duality (DUA) on the CTA-firm value relationship. DUA is coded one if the CEO is not the Chair of the BoD and otherwise 0. I generate the interaction term between BTD and DUA (BTD*DUA) and include this interaction term in my model to further analyse the effect of CEO duality on the valuation implication of CTA. I use equations (4.20) and (4.21) to investigate the joint effect of BTD and DUA on firm value, represented by Tobin's q and market value, respectively.

Table 4.21   The effect of CEO duality on the CTA-firm value relationship in equations 4.20 and 4.21

(1) VARIABLE	(2) Fixed Effects Q	(3) Fixed Effects MV
L.Q	0.301***	
	(0.0424)	
L.MV		0.148***
		(0.0370)
BTD	0.984***	2.015***
	(0.271)	(0.436)
DUA	-0.0445*	-0.0248
	(0.0270)	(0.0382)
DUA*BTD	-0.973***	-1.570***
	(0.365)	(0.561)
SIZE	0.0122	0.0854
	(0.0419)	(0.0533)
GROWTH	0.000339**	0.00124***
	(0.000147)	(0.000254)
DIV	1.952***	1.939***
	(0.319)	(0.454)
INST	0.000341	-0.000111
	(0.000379)	(0.000604)
STATE	-0.000923	-0.000920
	(0.000610)	(0.000998)
FOREIGN	0.00213*	0.00131
	(0.00117)	(0.00208)
LEV	0.222*	0.789***
	(0.126)	(0.205)
PPE	-0.150*	0.907***
	(0.0913)	(0.141)
AGE	-0.0217	-0.0487*
	(0.0156)	(0.0253)
RISK	-0.0488**	-0.0141
	(0.0233)	(0.0313)
DIS_ACC	-0.132***	0.378***
	(0.0462)	(0.0881)
INTANG	-0.0827	0.830*
	(0.363)	(0.481)
Observations	2,551	2,540
R-squared	0.214	0.327
Industry	YES	YES
Year	YES	YES

Note: This table reports the regression of firm value proxies on the interaction terms BTD*DUA. DUA is coded as zero if CEO is also the Chair of the BoD, otherwise one. I include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation.

***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

$$Q_{i,t} = \tau_0 + \tau_1 * Q_{i,t-1} + \tau_2 * BTD_{i,t} * DUA_{i,t} + \tau_3 * BTD_{i,t} + \tau_4 * DUA_{i,t} + \tau_5 * Control_{i,t} +$$
$$Industry + Year + \varepsilon_{20i,t} \qquad (4.20)$$

$$MV_{i,t} = \varsigma_0 + \varsigma_1 * MV_{i,t-1} + \varsigma_2 * BTD_{i,t} * DUA_{i,t} + \varsigma_3 * BTD_{i,t} + \varsigma_4 DUA_{i,t} + \varsigma_5 * Control_{i,t} +$$
$$Industry + Year + \varepsilon_{21i,t} \qquad (4.21)$$

where: $Q_{i,t}$, and $MV_{i,t}$ are Tobin's q and market value of equity of firm i in year t; $BTD_{i,t}$ is the book-tax difference of firm I in year t; $DUA_{i,t}$ is CEO duality of firm i in year t; and $BTD_{i,t} * DUA_{i,t}$, is the interaction term between book-tax difference and CEO duality. $Control_{i,t}$ is a vector of the control variables. The variables in equations (4.20) to (4.21) are presented in Table 3.2.

The regression results of the effect of the CEO duality on the CTA-firm value relationship are reported in Table 4.21. Column 2 presents the joint effect of CEO duality and BTD on Tobins' q. The coefficients of both BTD and BTD*DUA are significant at the 1% level. Though the coefficient of BTD (0.984) is positive, the coefficient interaction term BTD*DUA (-0.973) is negative. This result indicates that the positive effect of a one-percent increase in BTD on Tobins'q decreases by 0.973 percent in firms with CEO duality. In other words, CEO duality mitigates the positive effect of BTD on Tobin's q. Our results show both the direct and indirect negative effects of CEO duality on firm value.

I regress BTD*NED on MV as an alternative proxy for firm value and report the regression results in Table 4.21, column 3. The estimated coefficients of both BTD (2.015) and BTD*DUA (-1.570) remain significant at the 1% level. This result indicates that the positive effect of a one-percent increase in BTD on Tobins' q decreases by 1.579 percent in firms with CEO duality. However, the coefficient of DUA (-0.0248) becomes insignificant.

I regress BTD*NED on MV as an alternative proxy for firm value and report the regression results in Table 4.21, column 3. The estimated coefficients of both BTD (2.015) and BTD*DUA (-1.570) remain significant at the 1% level. This result indicates that the positive effect of a one-percent increase in BTD on Tobins' q decreases by 1.579 percent in firms with CEO duality. However, the coefficient of DUA (-0.0248) becomes insignificant.

In sum, my results are consistent over different proxies for firm value and indicate that the positive effect of BTD on firm value can be mitigated when the CEO is also the Chair of the BoD. In line with Jensen's (1993) and Wahab et al.'s (2017) argument that CEO duality leads to weak governance and scepticism

from stockholders about rent extraction from CTA. Hence, investors no longer place a value premium on firms with a high level of CTA.

4.4.4   Board size and the CTA-firm value relationship

Based on the argument firms with a large board can benefit from the range of skills and experience of directors on the BoD and, thus, can provide a high quality of advice for strategic decisions (Kiel & Nicholson, 2003; Adams& Mehran, 2005), I use the number of directors on the BoD (BSIZE) as another characteristic of the BoD to examine its effect on the CTA-firm value relationship. I generate the interaction term between BTD and BSIZE (BTD*BSIZE) and include this interaction term into my model to analyse the effect of BoD's size on the CTA-firm value relationship. I use equations (4.22) and (4.23) to investigate the joint effect of BTD and DUA on firm value, represented by Tobin's q and market value, respectively.

$$Q_{i,t-1} = \varphi_0 + \varphi_1 * Q_{i,t-1} + \varphi_2 * BTD_{i,t} * BSIZE_{i,t} + \varphi_3 * BSIZE_{i,t} + \varphi_4\, Control_{i,t} + Industry +$$
$$Year + \varepsilon_{22i,t} \tag{4.22}$$

$$MV_{i,t} = \varphi_{01} + \varphi_{11} * MV_{i,t-1} + \varphi_{21} * BTD_{i,t} * BSIZE_{i,t} + \varphi_{31} * BSIZE_{i,t} + \varphi_{41} Control_{i,t} +$$
$$Industry + Year + \varepsilon_{23i,t} \tag{4.23}$$

where: $Q_{i,t}$, and $MV_{i,t}$ are Tobin's q and market value of equity of firm i in year t; $BTD_{i,t}$ is the book-tax difference of firm I in year t; $BSIZE_{i,t}$ is the number of directors of the BoD of firm i in year t; and $BTD_{i,t} *$ $BSIZE_{i,t}$ is the interaction term between book-tax difference and the number of directors on the BoD. $Control_{i,t}$ is a vector of the control variables. The variables in equations (4.22) to (4.23) are presented in Table 3.2.

The regression results of the joint effect of the BoD's size and CTA on firm value are reported in Table 4.22. Column 2 shows the regression result of the effect of BTD*BSIZE on Tobin's q. The coefficient of BTD*BSIZE (0.149) is positive and insignificant. The coefficients of both BTD (-0.216) and BSIZE (0.0133) are also insignificant.

I regress BTD*BSIZE, BSIZE and the same set of control variables on MV and report the results in Table 4.22, column 3. The coefficient of BTD*BSIZE is 0.55 and significant at the 1% level. However, the coefficients of BTD (-1.598) and BSIZE (0.00392) are insignificant. This result can be interpreted that the

Table 4.22   The effect of BoD size on the CTA-firm value relationship in equations 4.22 and 4.23

(1) VARIABLE	(2) Fixed Effects Q	(3) Fixed Effects MV
L.Q	0.299***	
	(0.0430)	
L.MV		0.145***
		(0.0370)
BTD	-0.216	-1.598
	(0.769)	(1.126)
BSIZE	0.0133	0.00392
	(0.00864)	(0.0132)
BTD*BSIZE	0.149	0.550***
	(0.142)	(0.198)
SIZE	0.000208	0.0699
	(0.0416)	(0.0538)
GROWTH	0.000329**	0.00126***
	(0.000146)	(0.000253)
DIV	1.973***	1.957***
	(0.318)	(0.451)
INST	0.000473	0.000131
	(0.000383)	(0.000603)
STATE	-0.000976	-0.000970
	(0.000597)	(0.000986)
FOREIGN	0.00184	0.000938
	(0.00118)	(0.00209)
LEV	0.226*	0.797***
	(0.124)	(0.203)
PPE	-0.147	0.896***
	(0.0916)	(0.141)
AGE	-0.0195	-0.0470*
	(0.0160)	(0.0264)
RISK	-0.0486**	-0.0167
	(0.0233)	(0.0314)
DIS_ACC	-0.124***	0.387***
	(0.0465)	(0.0886)
INTANG	-0.100	0.824*
	(0.373)	(0.496)
Observations	2,561	2,550
R-squared	0.209	0.325
Number of ids	513	513
Industry	YES	YES
Year	YES	YES

Note: This table reports the regression of firm value proxies on the interaction terms BTD*BSIZE. BSIZE is the number of directors of the BoD. I include industry and year dummies to control for unobserved heterogeneity at the industry level and time-specific confounding factors. Standard errors are clustered along two dimensions (by firm and year) to control for errors in heteroskedasticity and autocorrelation. ***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.

effect of a one-percent increase in BTD on MV increases by 0.550 percent with an additional member on the BoD. This result is similar to Kiel and Nicholson (2003) who show that a large board of directors might contribute to enhancing firm value because they can provide better monitoring over the management and serve stockholders' interests. However, my results should be interpreted with caution because of the insignificance of the main effect of BTD and BSIZE on firm value.

Although there is evidence of a significant coefficient of BTD*BSIZE, the results are inconsistent on different proxies for firm value.

4.5 Chapter summary

This chapter reports the regression results on the relationship between the BoD, CTA and firm value in Vietnamese non-financial listed firms from 2009-2018. First, using fixed effect, ordinary least squares and 2SLS/IV, the results show a positive, statistically significant relationship between non-executive directors of the BoD on CTA in Vietnamese non-financial listed firms. The results support the argument that non-executive directors can use tax-saving effects from CTA to improve bottom-line performance (Khaoula & Ali, 2012; Mulyadi et al., 2014). I also find evidence of the negative effect of CEO duality on ETRs. A CEO who is also the Chair of the BoD has more incentives to avoid taxes because of both the tax-savings effect and rent extraction effects from CTA. However, the result becomes insignificant with book-tax differences to measure the level of CTA. I find no significant effect of female directors and the size of the BoD on different proxies of CTA and estimators. Notably, regarding other corporate governance mechanisms, state ownership and institutional ownership do not significantly affect CTA, but there is evidence of a negative effect of foreign ownership on CTA measured by BTD, PBTD and DBTD. This result indicates that foreign investors place more emphasis on legitimacy and social responsibility than they do on the benefits of CTA (Yoo & Koh, 2014; Shi et al., 2020). However, my results should be interpreted with caution because of the insignificant effect of foreign ownership on ETRs.

Secondly, broadly consistent with previous studies, I find a positive impact of CTA on firm value in a sample of Vietnamese non-financial listed firms from 2007-2018. This means Vietnamese non-financial listed firms perceived CTA as a tax-savings device that can transfer cash from the government to firms in the context of redundant tax incentives and a lack of transparency as well as weak tax administration.

Finally, I consider the role of BoD in the CTA-firm value relationship. I find that female directors can affect the CTA-firm value relationship. In particular, I find evidence of a positive joint effect of CTA and female

directors of BoD on firm value. My results show that female directors can intensify the positive effect of BTD on firm value. Meanwhile, CEO duality mitigates the positive effect of BTD on firm value because of concern about the rent extraction effect if the CEO is also the Chair of the BoD.

Chapter 5

Conclusions and Implications

This chapter provides an overview of the study, suggests the implications, discusses the limitations of the study and proposes future research avenues. Section 5.1 summarises the main content of the study in the previous chapters. The major findings and the implications are provided in sections 5.2 and 5.3, respectively. Section 5.4 discusses the limitations of the study and future research possibilities and section 5.5 summarises the chapter.

5.1 Overview of the study

CTA is more sophisticated than individual tax avoidance and is related closely to agency theory because it involves the strategic behaviour of both stockholders and managers. The "black box" of firms' tax avoidance behaviours have been recently explained by corporate governance and the relationship between managers, stockholders and the BoD. Firms with better governance mechanisms might either choose to increase tax avoidance practices to improve bottom-line performance (Minnick & Noga, 2010) or decrease tax avoidance activities to further legitimise their existence because of the negative effects of CTA on society (Lanis & Richardson, 2011). Additionally, though CTA benefits firms because of tax-saving effects, whether managers serve shareholders' best interests and the role of the BoD in addressing agency problems in terms of tax planning strategy are still debatable.

Vietnam is a transition economy that has moved from a centrally-planned economy to a market-oriented economy during the Doi Moi reform in 1986. With remarkable changes in the economy following the Doi Moi reform, Vietnam has become one of the fastest-growing developing economies in the world and an investable market that has caught the attention of many investors (World Bank, 2020). The transformation, however, has also brought new challenges, especially corporate governance practices and corporate income tax issues. The widespread use of tax incentives to promote investment and growth has recently resulted in slowing revenue growth. Light penalties and pervasive tax corruption weaken voluntary tax compliance and create more opportunities for firms to avoid taxes. Additionally, there is still a gap between a progressive legal framework and practice regarding a corporate governance code in Vietnam, especially the BoD's role and structure. The code of governance mechanism focusing on restructuring ownership and the BoD needs to continue to be revised as the country further opens and

integrates into the world economy. The slow privatization and inadequate regulation of foreign ownership and the BoD's role in addressing agency conflicts and protecting investors remain costly lagging indicators for Vietnam.

Responding to a call for research on firms' tax behaviour in Vietnam, this study investigates the relationship between the BoD, CTA and firm value using a sample of Vietnamese non-financial listed firms from 2009-2017. In particular, I examine how the BoD affects CTA (Research Objective 1), how CTA affects firm value (Research Objective 2) and whether there is a joint effect between the BoD and CTA on firm value (Research Objective 3). To explore the relationship between the BoD, CTA and firm value, data were analysed using the FE model to control for the time-invariant effects of the panel data. I use the 2SLS/IV and system-GMM estimator to validate the results from FE because of potential endogeneity arising from the relationship between CTA and firm performance and the dynamic panel data.

Chapter 1 provides the rationale and discusses the contributions of the research to the current literature. This is the first empirical study to investigate the effects of CTA on firm value among Vietnam non-financial listed firms, a lack in the literature. The study also undertakes an in-depth investigation of other determinants influencing CTA in Vietnam. Secondly, though there is a debate on whether CTA benefits stockholders, the study confirms a positive relationship between CTA and firm value in the context of a transition economy with a lack of strategic commitment to reform and opaque institutional settings. Thirdly, the study is the first attempt that examines the joint effect of BoD and CTA on firm value in frontier and emerging market economies, which is a research gap in the literature. Lastly, this study provides some practical implications for investors, firms and policymakers in Vietnam and frontier markets. Investors should consider the BoD's structure and tax planning strategy analysis to make better investment decisions. Policymakers should revise and advance reforms regarding corporate governance regulations and taxation towards sustainable development and social equity.

Chapter 2 discusses previous studies on the agency theory of CTA and the relationship between the BoD, CTA and firm value. CTA is much more sophisticated than individual tax avoidance because it involves the strategic behaviour of both stockholders and managers. Additionally, though CTA benefits firms because of its tax-saving effects, it comes with costs such as reputation costs that affect firms' legitimacy. Thus, mixed results on the relationship between corporate governance, CTA and firm value are found in the literature. In the limited research on these relationships in frontier and emerging markets, prior research focuses on the effects of ownership structure as a governance mechanism affecting firm performance and

firms' tax planning strategy. There is limited research on the effect of the BoD on CTA and its valuation implications. This significant research gap motivated and drove this study.

Chapter 3 describes the data, empirical models and estimation methods. The chapter discusses the measurement of the CTA, firm value and other control variables. Next, the chapter presents the panel-data regression equation on the relationship between the BoD, CTA and firm value. The chapter also discusses the estimation methods, including FE, 2SLS/IV and system-GMM.

Chapter 4 presents the empirical results of the relationship between the BoD, CTA and firm value. The first section reports the regression results of the effect of the BoD's characteristics on CTA. The results of the relationship between CTA and firm value and the moderation role of the BoD on this relationship are discussed in the next section. Robustness checks using alternative proxies of CTA and firm value are also reported in this chapter.

5.2 The study's findings

Although Desai and Dhamapala (2009) and other studies have explained tax avoidance behaviour among firms based on agency theory, the relationship between corporate governance, CTA and firm value is still debatable. This study evaluates the effect of BoD as an inside governance mechanism on CTA and the valuation implications of CTA in Vietnamese non-financial listed firms. This study uses the number of non-executive directors, female directors, BoD size and CEO duality to analyse the effects of the BoD on CTA and the CTA-firm value relationship. I also use a set of control variables, industry and year dummies to control for other effects on CTA and firm value, industry- and year-specific confounding factors, respectively. To examine the unbalanced panel data of Vietnamese non-financial listed firms from 2010-2015, I use the FE estimator as the main estimation technique with clustered standard errors by firm and year to control for errors in heteroskedasticity and autocorrelation. For the potential endogeneity between CTA and firm performance and the dynamic panel data, I use 2SLS/IV and the system-GMM estimator to validate the results from FE. I also perform OLS and Paris-Winsten regressions for comparison purposes. The results of the relationship between the BoD, CTA and firm value are consistent for different proxies of CTA and firm value. In particular, the main findings are summarised below.

5.2.1 The effect of the Board of Directors on corporate tax avoidance

Table 5.1 summarizes the main effect of the BoD on CTA. My study confirms that the level of CTA is affected by the number of non-executive directors on the BoD of Vietnamese non-financial listed firms. This conclusion holds for different measures of CTA. My finding supports Minnick and Noga (2010) who argue that the independence of the BoD can improve bottom-line performance via the tax-saving effects of CTA. It is also consistent with Khaoula and Ali (2012) and Mulyadi et al. (2014) who show a positive relationship between the BoD's independence and CTA. However, Khaoula and Ali (2012) measured CTA by accounting for effective tax rate (ETR) which excludes the presence of deferral strategies. Though Mulyadi et al. (2014) took into account deferred tax expenses in the current effective tax rate (CETR), many observations are dropped because ETR ranges between 0 and 1. I use both AETR and CETR as dependent variables for a robustness check. The coefficients of NED remain negative and significant. This result indicates a positive relationship between non-executive directors and CTA.

Table 5.1 **A summary of the effect of the BoD on CTA**

BoD's characteristics	NED	FEMALE	DUA	BSIZE
BTD	+	0	0	0
DBTD	+	0	0	0
AETR	-	0	+	0
CETR	-	0	+	0

I find no statistically significant effect of board size and female directors on CTA. First, whether the BoD's size affects a firm's decision is questionable. Though a larger board faces coordination issues as explained by the institutional behaviour theory (Jensen, 1993), it can help firms make better decisions because of the wide range of skills and experience from directors on the BoD (Kiel & Nicholson, 2003; Adams & Mehran, 2005). Additionally, the insignificant coefficient of the board size may be caused by the dominance of 5-member boards which accounted for over two thirds (67%) of the sample. Secondly, though Vo and Phan (2013) and Nguyen et al. (2015) find that female directors on the BoD have a positive impact on the performance of Vietnam non-financial listed firms, my result shows a significant effect of female directors of the BoD on CTA. My result aligns with Khaoula and Ali (2012) who show that gender diversity on the BoD does not affect CTA because of the negligible proportion of females on the BoD. The coefficient of the number of females on the BOD is positive but its magnitude is small and insignificant. This result indicates that females might have an effect on a firm tax's strategy planning but the magnitude of the effect is not strong. The role of women in the BoD in tax planning strategy might be limited in

Vietnamese non-financial firms. This implication supports the argument of Vu et al. (2018) that women's opportunities for career advancement and leadership in Vietnam are still restricted and undermined by oppressive gender norms (Vu et al., 2018).

My study provides evidence of the effect of CEO duality on CTA measured by ETRs. The result shows that a firm without CEO duality is less likely to have higher ETRs. In other words, a firm is more likely to engage in tax avoidance activities when CEO is also the Chair of the BoD. This result supports Vo and Nguyen (2014) who find a significant positive effect of CEO duality on firm performance. My finding suggests that a CEO who is the Chair of the BoD has a better understanding of the firm's operations and tax planning strategy so can have more motivation for both rent extraction and tax-saving from CTA. My results must be interpreted with caution because the result is not robust when using alternative proxies for CTA. The positive effect of CEO duality remains when I use book-tax differences as an alternative proxy for CTA, but the effect is insignificant.

Table 5.2 summarizes the effect of other factors on CTA. Interestingly, I find that foreign ownership is another governance mechanism that significantly, negatively affects BTD. My result aligns with Yoo and Koh (2014) and Shi et al. (2020) who report that foreign investors place more emphasis on legitimacy and social responsibility than they do on the benefits of CTA. However, the significant effect no longer holds when using ETRs as proxies for CTA. The results might be biased because of the limitation of ETRs since I include only the value range from zero to one.

Table 5.2   **A summary of the effect of other factors on CTA**

Factor	FOREIGN	ROA	SIZE	PPE
BTD	-	+	+	+
DBTD	-	+	+	+
AETR	0	+	0	0
CETR	0	+	+	0

Notably, among other factors influencing CTA, I find a positive, significant effect of firm size, PPE and ROA on CTA measured by BTD and DBTD of Vietnamese non-financial listed firms. Although the significant effect of firm size and capital intensity no longer hold when I measure CTA by ETRs, there is a consistent result of the positive effect of ROA on CTA. My result confirms the argument of Kraft (2014) that profitable firms might have strong incentives to reduce their taxes as they transfer their profits from a high tax sector or area via tax deductions, exemptions and credits. My result is consistent with Ribeiro (2015) and Ha and

Phan (2017). However, both use only ETRs as proxies of CTA and did not control for endogeneity between CTA and firm performance.

5.2.2   The effect of CTA on firm value

Table 5.3 **Summary of the effect of CTA on firm value**

	Q	MV
BTD	+	+
DBTD	+	+
AETR	-	-
CETR	-	-

Table 5.3 summarises the effect of CTA on firm value. I show a significant, positive effect of CTA on firm value in Vietnamese non-financial listed firms. This conclusion holds for different measures of CTA and firm value. This means Vietnamese non-financial listed firms perceive CTA as a tax-saving mechanism that can transfer cash from the government to firms in the context of redundant tax incentives and lack of transparency as well as a weak tax administration. This finding corroborates the arguments of Hoofman (1961) that stockholders' benefits from tax savings of CTA are greater than its costs, especially in developing countries such as Vietnam which confront many corporate income tax issues. Vietnam has confronted pervasive tax corruption, weak administration, generous tax incentives and light penalties for tax non-compliance. The intertwining of these factors, in turn, leads to more opportunities for CTA and lowers its costs including the low probability of being detected as a "tax avoider" and reputation costs. The results align with Ariff and Hashim (2014). However, Ariff and Hashim (2014) only find the significant effect of AETR as a proxy for CTA on MV as a proxy of firm value. The result from the alternative analysis using various measures of ETR is not robust. They also do not control for potential endogeneity from the dynamic nature of panel data and the relationship between CTA and firm value.

My finding does not support Wahab and Holland (2012), Ftouhi et al. (2015) and Park et al. (2016) who show a negative effect of CTA on firm value. The different results from my study might come from the different samples. Wahab and Holland (2012), Ftouhi et al. (2015), and Park et al. (2016) focus on developed markets where corporate income tax issues relating to tax corruption, tax incentives and tax administration, are less severe than those of developing markets. My result also provides no evidence of a strong effect of rent diversion from CTA, which might be larger than the tax-saving effect. In other words, investors still place a premium on firms with a higher level of CTA.

5.2.3 The joint effect of the BoD and CTA on firm value

Table 5.3 summarises the joint effect of the BoD and CTA on firm value. My findings show a significant joint effect between the number of female directors of the BoD and book-tax difference on firm value. This conclusion holds for different measures of firm value. My result indicates that if CTA is an enhancing-value activity, its positive effect on firm value can be intensified in firms with more female directors on the BoD. My result supports Nguyen et al.'s (2015) view that female members on the BoD have a positive impact on the value of Vietnam non-financial listed firms. However, my study further investigates the hidden mediation effect of female directors of the BoD on firm value via CTA. Although I did not find any direct effect of female directors on the BoD on CTA, I find that female director positively affect firm value via CTA. My result supports the argument of Adams and Ferreira (2009) that female directors have a positive impact on board effectiveness in monitoring agency conflicts between shareholders and managers in terms of the tax planning strategy. Female directors provide better communication among members of the BoD and different opinions and experiences in the boardroom. Moreover, female directors attend board meetings more regularly than male directors and this enhanced board participation could lead to better monitoring of management regarding rent extraction and tax-saving effects from CTA and hence can improve firm performance and firm value. Investors can place a value premium on CTA in countries with strong minority shareholders' protection and governance mechanisms because they expect that tax savings will be paid to them.

Table 5.4   **A summary of the joint effect of the BoD and CTA on firm value**

Factor	Q	MV
BTD *NED	0	+
BTD *FEMALE	+	+
BTD*DUA	-	-
BTD*BSIZE	0	+

My findings also show that the positive effect of CTA on Tobin's q can be mitigated in a firm with CEO duality. Though the significantly positive effect of BTD remains, the coefficient of BTD*DUA became negative and significant. My result supports the argument of Jensen (1993) that separation of the chair of the BoD could contribute to an effective monitoring mechanism over management performance. If the CEO is also the chair of the BoD, he/she cannot separate his/her personal benefit from shareholders' interests when monitoring the board. My result also supports Wahab et al. (2017) who argue that CEO duality leads to weak governance which leads to scepticism from stockholders about rent extraction from

CTA of managers so no longer place a value premium on firms with a high level of CTA. However, Wahab et al. (2017) find no significant joint effect between CEO duality and CTA on firm value.

The results also show non-executive directors and board size effect on the relationship between CTA measured by BTD and firm value measured by MV. However, the result is not robust when using Q as an alternative proxy for firm value.

5.3 Research contributions and Implications

5.3.1   Implications for theory and literature

Although tax avoidance behaviour among firms and its valuation implications have recently been examined under the agency theory, prior research shows mixed results on the relationship between BoD, CTA, and firm value. This study is the first attempt to comprehensively examine the relationship between the BoD, CTA and firm value in Vietnam, a transition economy. This study contributes to the extant literature on corporate governance by providing empirical evidence of the effect of the BoD on CTA and its valuation implications in a transition economy such as Vietnam. In particular, this study contributes to the literature in the following four ways.

First, the study shows how CTA is valued by stockholders in the context that generous tax incentives, weak tax administration and a high level of tax corruption can create more opportunities and motivation for firms to avoid taxes. The results are inconsistent with prior research based on developed countries' samples such as the US (Desai & Dharmapala, 2009), the UK (Wahab & Holland, 2012) or Europe (Khaoula& Moez,2019), which show that investors do not place a premium on CTA because of the potential excess costs from tax avoidance activities, especially agency costs and rent extraction from CTA.

Second, the study comprehensively opens the "black box" of firms' tax behaviour in Vietnam. There is minimal research on how determinants influence CTA in Vietnam. For instance, Ha and Phan (2017) examined the effect of state ownership, firm size, profitability, leverage and tangible assets on CTA in a sample of 460 non-financial listed firms on the Vietnam Stock Exchange from 2009 to 2015. However, the authors use only ETRs as proxies for CTA. Because of the limitation of ETRs (data truncation error), this study is more advanced since I include book-tax differences as alternative proxies for CTA. The study also controls for the non-conforming and conforming tax avoidance by using discretionary book-tax differences (excluding the effect of earnings management from book-tax differences). Additionally, to date, no study has investigated the relationship between the BoD and CTA and the effects of corporate

tax avoidance and firm value in Vietnam. The results of this study are consistent with Minnick and Noga (2010) that non-executive directors on the BoD can choose to lower a firm's taxes and improve bottom-line performance. There is evidence that CEO duality has more motivation to reduce ETRs regarding the tax-savings effect and the rent extraction effect from CTA.

Third, this is the first study that attempts to comprehensively examine the moderation role of the BoD on the CTA-firm value relationship. There is minimal research that examines the joint effect between the BoD and CTA on firm value, especially in developing countries. Evidence from Bhagiawan and Mukhlasin (2020) finds that female directors mitigate the positive effect of CTA on firm value in Indonesian manufacturing listed firms from 2016- 2018. My study shows the opposite result. Female directors could intensify the positive relationship between CTA and firm value because they can improve monitoring over management and protect investors' benefits. I also find that CEO duality leads to scepticism in stockholders about rent extraction from CTA by managers and hence stockholders no longer place a premium on firms with a high level of CTA. This effect is more advanced when using different proxies for firm value.

Four, the current study is more advanced than prior studies by controlling for potential endogeneity arising between CTA and firm performance. I use 2SLS/IV and system-GMM to validate the results from FE to address the potential endogeneity arising from the relationship between CTA and firm performance.

5.3.2 Implications for Vietnamese non-financial listed firms

My findings suggest that Vietnamese non-financial listed firms can consider the role of BoD as an internal corporate governance mechanism in addressing agency conflicts and protecting stockholders' benefit.

My study provides empirical evidence of a significant effect of female directors on firm value via the CTA channel. Female directors can provide better monitoring over managers in mitigating rent extraction effects by managers and enhancing tax-saving effects from CTA. However, women are not likely to be appointed to a BoD in Vietnam even if they have high skills, experience and knowledge. There are about 50% firm-year observations in the sample without any female directors on the BoD, but the average percentage of women on the BoD is 13.79 per cent. Vietnam remains significantly behind best practice European jurisdictions that have 30 to 40 per cent female boardroom representation. Although gender equality and women's empowerment has recently improved significantly, Vietnam faces many challenges relating to gender because of the intertwining of Confucian ideologies under Chinese domination and communist-socialist ideals (Vu et al., 2018). Women's opportunities for career advancement and

leadership are still restricted and undermined by oppressive norms, political systems and religious ideologies rather than biological differences. Though no legal framework or regulations govern female representation on the BoD, my results suggest that female directors should be included on the BoD to enhance the effectiveness of the BoD in protecting stockholders' interests.

Additionally, my study shows that CEO duality mitigates the positive effect of CTA on firm value. According to current regulations[35], the CEO of a listed firm can be the Chair of the BoD if the GMS approves. Vo and Phan (2013) show that a CEO could understand a firm's operations comprehensively and make better decisions if he is also the Chair of the BoD in Vietnamese non-financial listed firms. However, I find that CEO duality can negatively affect the independence of the BoD in avoiding agency conflicts between managers and stockholders and create more opportunities for rent extraction from CTA. Thus the separation of CEO and Chair of the BoD is expected to enhance the BoD's effectiveness in enhancing accountability to stockholders.

Collectively, each Vietnamese non-financial listed firm can take into account the attendance of female members on the BoD and separate the role of CEO and Board Chair to improve the BoD's effectiveness and firm value. Although there is no robust result of the effect of non-executive directors of the BoD and Board size on the valuation of CTA, each firm should consider increasing the independence of the BoD with an appropriate proportion of non-executive directors, which is expected to improve monitoring over management performance. Though board size does not affect CTA and firm value, Vietnamese non-financial listed firms should find a balance between coordination advantages in a small BoD and the wide range of skills and experience from the many directors on a large BoD.

5.3.3   Implications for Vietnamese policymakers

This study provides implications for policymakers to revise and advance reforms regarding corporate governance regulations toward accountability to investors and taxation towards sustainable development and social equity. One of the most important targets of fundamental tax reform in Vietnam is avoiding tax losses and improving compliance among corporate taxpayers that contribute to the major source of tax revenue (Ministry of Finance, 2017). This study provides empirical evidence for tax authorities of the effect of the governance mechanism and other factors in firm tax planning. Thus tax authorities can consider

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[35] Corporate Governance Circular in 2012 (Ministry of Finance, 2012),

and revise a set of criteria on how to choose, classify and score criteria to choose firms for tax audits. In particular, following guidelines on the application of the tax risk management principles[36], a set of criteria has been designed to classify taxpayers based on their tax risk and tax compliance levels. Regarding the classification of compliance from the history of a tax audit – inspection, several typical cases with low compliance were identified, including having administrative penalties related to tax registration, tax declaration, tax payments, tax debts, and tax refunds. However, these criteria cannot identify potential high tax risk firms that have not been selected for a tax audit. Based on my findings, tax authorities can consider governance mechanisms including non-executive directors on the BoD, foreigner ownership and ROA as factors influencing CTA when choosing firms for tax audits. Tax authorities should also revise policies towards tightening regulations and increasing tax transparency to make greater efforts to prevent CTA. To increase the tax compliance from enterprises, tax authorities should consider an increase in fine and punishment for tax non-compliance activities as well as improve the perception of stakeholders in tax compliance and corporate social responsibility.

This study also provides implications for policymakers in revising the current corporate governance regulations and taking further reforms to enhance accountability to investors. According to the Corporate Governance Circular in 2012 (Ministry of Finance, 2012), the number on the BoD is from five to eleven members who may not be shareholders of a listed firm in Vietnam and one-third of the members must be non-executive members. Additionally, the CEO of a listed firm can be the Chair of the BoD if the general meeting of shareholders (GMS*) approves. Although many firms meet these requirements, the role of the BoD in addressing agency conflicts and protecting stockholders' benefits is still questionable. My findings suggest that policymakers should revise the current corporate governance code regarding female representation in the board room and the separation of the CEO and Chair of the BoD to improve the effectiveness of the BoD in monitoring management and the accountability to investors. Additionally, policymakers should strengthen information disclosure regarding corporate governance mechanisms, including the information of the Board room, insider ownership and trading, to enhance transparency and accountability for investors. Finally, policymakers should build up and analyse data with consistent criteria from firms' disclosures and make adjustments when necessary.

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[36] Circular No. 39/2014/TT-BTC dated March 31, guides the implementation of goods sale and service provision invoices; Circular *No.* 204/2015*/*TT-BTC dated 21 December 2015, provides for application of risk management in tax management.

5.3.4 Implications for investors

The relationship between CTA, corporate governance and firm value is a source of information for investors when making investment decisions. The study's findings provide some practical implications for investors as follows.

First, as CTA positively affects firm value among Vietnamese non-financial listed firms, investors can benefit from insightful analyses of firms' tax strategies to make better investment decisions. Investors in Vietnamese non-financial listed firms place a premium on CTA because of its tax-savings effect. In a developing country such as Vietnam, there are many tax loopholes from tax incentives and light penalties for tax non-compliance behaviours as well as inconsistent regulations. Thus investors expect that tax savings of CTA are greater than their cost and these savings will be paid to them. However, investors should be cautious when there is increased attention to corporate social responsibility arising from tax avoidance issues.

Second, investors also can take the effectiveness of the BoD in monitoring management and protecting their interests into account when making an investment decision in the Vietnamese stock market. In particular, this study provides empirical evidence of the effect of female directors and CEO duality on the valuation of CTA. Stockholders who have invested in Vietnamese non-financial listed firms can consider the female representation and CEO duality with their voting rights at the shareholders' general meeting for the election of directors to the BoD. Each individual investor may not control the BoD or the firm's daily operations. However, they are ultimately responsible for reviewing governance policy and restructuring the BoD so that it can provide an adequate level of commitment to protect their interests. Information disclosure regarding the board room can also provide further information beyond financial analysis and tax planning strategy for investors when making an investment decision in Vietnamese non-financial listed firms.

5.4 Limitations and future studies

This study investigates the relationship between CTA, firm value and corporate governance in Vietnamese non-financial listed firms. The study has both academic and practical applications, but there are a few limitations.

First, the study investigates only the effect of four common BoD features: board size, CEO duality, non-executive directors, and female directors, on the BoD on CTA and its valuation. However, other features

of the BoD such as education, age group, BoD's connections and board remuneration could influence a firm's the tax planning strategy and firm value. Future research may seek to examine how these features affect CTA and its valuation. Future research may also focus on the role of women on the BoD by investigating other demographic characteristics of female directors such as education, work experience, marriage status, age and culture on firms' tax behavior and performance.

Secondly, our study is affected by the availability of data. The study period began in 2007 when regulations on corporate governance applicable to listed firms were enacted. However, many non-financial listed firms did not provide adequate disclosures. There is a gap between a progressive legal framework and practice regarding corporate governance disclosures. Thus, most data related to BoDs are available only from 2010. Another limitation of our data is that we inferred tax information from financial statements which are not always available from the firm's annual report. Thus future research may collect data from tax return disclosures to reflect more accurately the levels of CTA among firms. Future research can extend the sample to non-listed firms to make a better estimate of the relationship between CTA, firm value and corporate governance among Vietnamese firms and compare with non-financial listed firms that are expected to have higher levels of transparency and better corporate governance practices.

Thirdly, because of the unavailability of data on the Vietnam stock market, this study does not account for the effect of the 2008 global financial crisis on firm value and tax planning strategy during the study period. Future research might seek to explore the influence of external shocks such as the financial crisis and the Covid-19 pandemic, which will significantly improve our understanding of firm behaviours and firms' tax planning strategy through an uncertainty period.

Finally, other factors might moderate the relationship between CTA and firm value. For example, Wang (2010) points out that corporate opacity could create more opportunities for managers not only to extract a firm's resources from CTA but also to enhance shareholders' wealth. Thus, future research may seek to extend explanations of how CTA can affect firm value and other factors influencing its impact on firm value using an international sample.

5.5 Chapter summary

This chapter presents the overview, main findings, practical implications, study limitations and possible future research. Responding to the call for further research on the "black box" of firm tax strategies, which has been increasing in recent decades, I examine the relationship between CTA, firm value and the role

of BoD in Vietnamese non-financial listed firms. I find that non-executive directors on the BoD positively affect CTA. Broadly consistent with previous studies, I also find a positive impact of CTA on firm value in a sample of Vietnamese non-financial listed firms from 2007-2018. This means Vietnamese non-financial listed firms perceive CTA as a tax-savings device that can transfer cash from the government to firms in the context of redundant tax incentives and lack of transparency as well as weak tax administration. Further, I consider the role of the BoD in the CTA-firm value relationship. I find a significant joint effect of female directors and CEO duality on the CTA-firm value relationship.

The study's findings provide some practical implications for investors, firms and policymakers. First, as CTA positively affects firm value among Vietnamese non-financial listed firms, investors can benefit from insightful analyses of firms' tax strategies to make better investment decisions. Investors can take the efficiency of the BoD in monitoring management and protecting their interests into account when making a decision. Second, my findings suggest that non-financial listed firms can enhance firm value by improving the effectiveness of the BoD as an internal corporate governance mechanism. Each firm can consider increasing the independence of the BoD with an appropriate proportion of non-executive directors and separate the role of CEO and Board Chair. Vietnamese non-financial listed firms can also take into account the presence of female members on the BoD. Women are not likely to be appointed to a BoD in Vietnam even if they have high skills, experience and knowledge. Though no legal framework or regulations govern female representation on BoDs, my results suggest that female directors should be included on the BoD. Like the effect of non-executive directors on the BoD, female directors provide rigorous monitoring mechanisms and contribute to the effectiveness of the BoD in protecting shareholders' interests (Adams & Ferreira 2009). Finally, this study provides implications for policymakers in revising the current corporate governance regulations and making further reforms to enhance accountability to investors.

Future research in this field may seek to extend the explanations of how CTA affects firm value and other factors influencing its impact on firm value using an international sample.

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Appendix A **Regression result of the CTA-firm value relationship**

VARIABLES	(1) OLS Q	(2) OLS Q
L.Q	0.718***	
	(0.0138)	
BTD	0.281**	1.180***
	(0.136)	(0.194)
GROWTH	0.000326***	0.000344**
	(9.98e-05)	(0.000145)
DIV	2.087***	5.364***
	(0.140)	(0.175)
INST	0.000392	0.00143***
	(0.000251)	(0.000361)
STATE	0.000134	0.000859**
	(0.000250)	(0.000359)
FOREIGN	0.00124***	0.00499***
	(0.000444)	(0.000635)
SIZE	0.00654	0.0462***
	(0.00443)	(0.00630)
LEV	0.0570	-0.0653
	(0.0566)	(0.0821)
PPE	-0.0153	0.0910**
	(0.0297)	(0.0428)
AGE	0.000531	0.000894*
	(0.000375)	(0.000540)
RISK	-0.0379**	-0.0983***
	(0.0191)	(0.0269)
ACC	-0.152***	-0.0417
	(0.0401)	(0.0580)
INTANG	0.142	0.0281
	(0.155)	(0.222)
Observations	2,624	2,679
R-squared	0.725	0.432
Industry	YES	YES
Year	YES	YES

Note: This table reports the OLS regression results (equation 3.20) with and without lag of firm value.
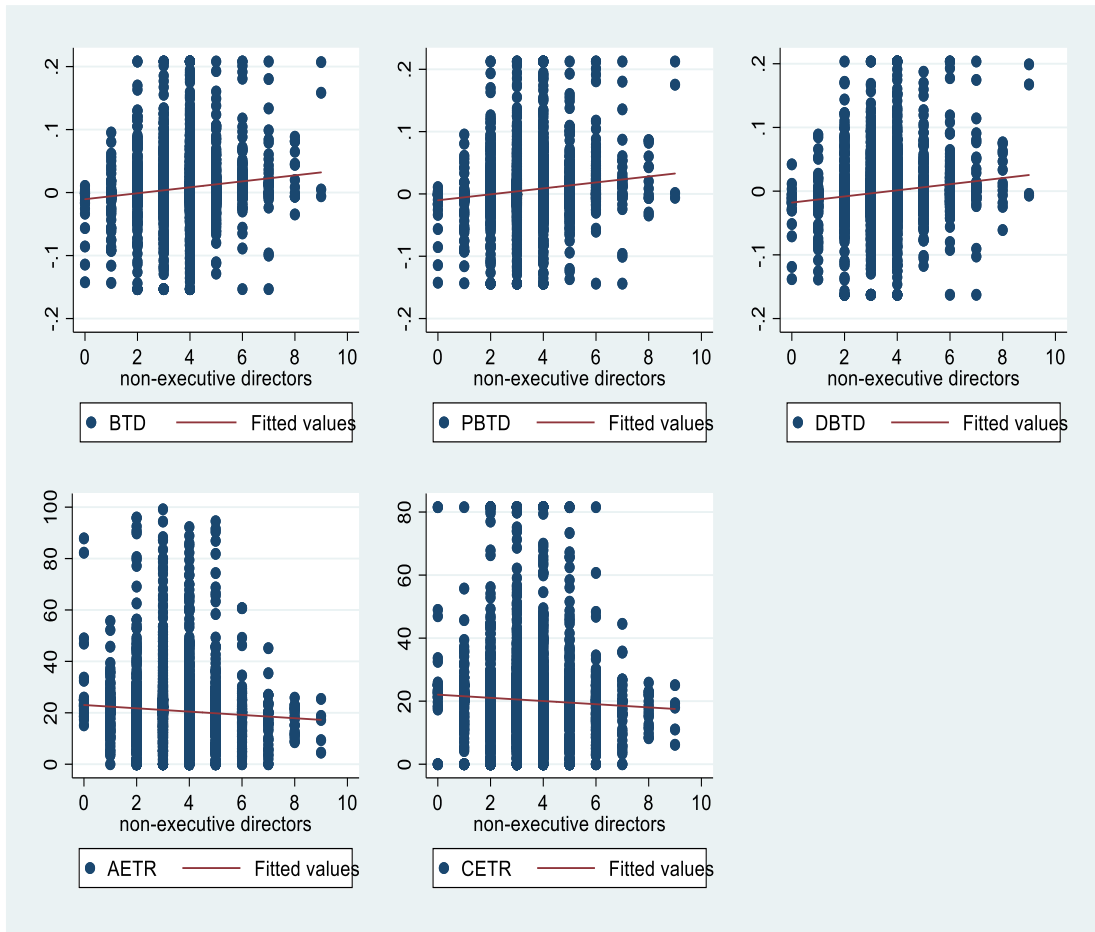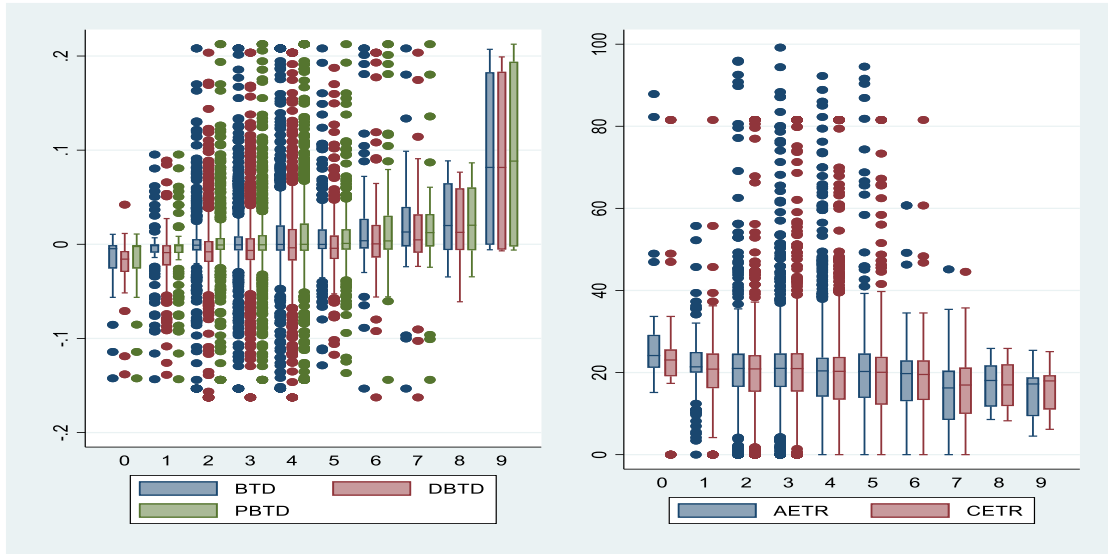***, **, and * denote statistical significance levels of 1%, 5% and 10%, respectively.
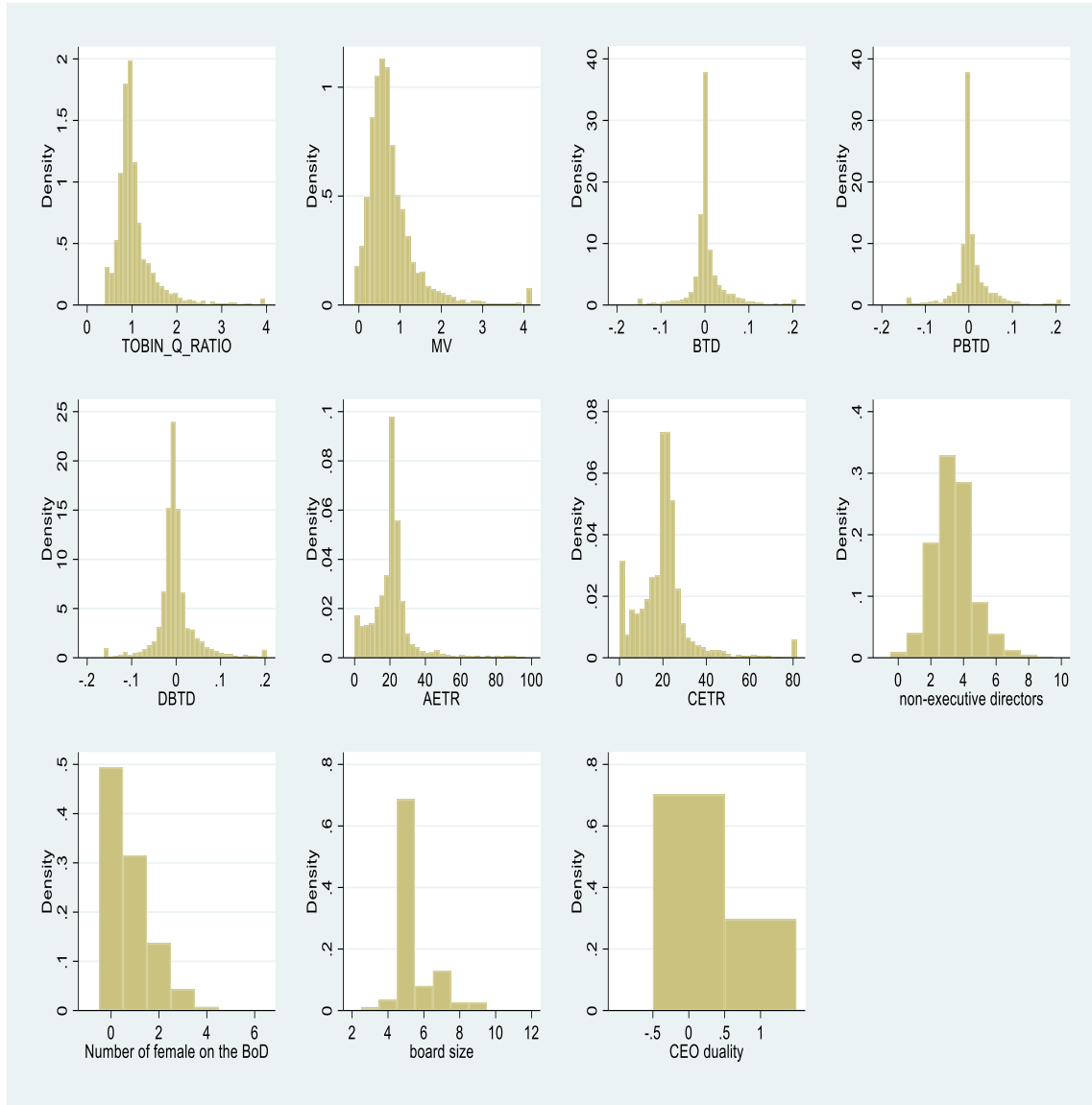
Appendix C   **Boxplot and Scatterplot of CTA levels in relation to NED**

Appendix D   Scatterplots of firm value in relation to CTA levels