

## **Nexus of Tax Avoidance and Firm Value in Pakistan: Moderating Role of Board Independence**

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### **Abstract**

*The aim of the current study is to investigate the impact of tax avoidance on firm value, further; this study also tests the moderating role of board independence in context of the association between tax avoidance and firm value. Literature provides inconclusive evidence in this regard and posits high dependence on contextual settings. This study extends literature by providing evidence from Pakistan and also reveals that tax avoidance and firm value relationship is highly dependent on board independence (CG). The agency theory suggests a negative association between tax avoidance and firm value, but a strong corporate governance mechanism mitigates this negative impact. Pakistan provides ideal context to study the nexus between tax avoidance and firm value, since the country has been facing large budget deficit and a low tax collection level. Therefore, it is important to investigate this relationship. This study is conducted using a sample of non-financial firms listed at Pakistan stock exchange (PSX) from 2005 to 2019. The System-GMM approach is used to test the hypothesis since System-GMM has the tendency to tackle the endogeneity problem that surfaces due to dynamic panel and reverses causality. The findings suggest that tax avoidance negatively impacts the market valuation of the firms. We further find that board independence moderates the relationship by mitigating the negative impact of tax avoidance. These findings are consistent with the agency theory. This study contributes to literature by providing evidence from Pakistan. It is the first study in Pakistan that utilizes three different proxies of tax avoidance to check its impact on firm value while using board independence as a moderating variable.*

**Keywords:** Corporate Tax Avoidance, Firm value, Corporate Governance, Board Independence, Dynamic panels, System-GMM

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## Introduction

Corporate tax avoidance (*hereafter referred to as CTA*) is an important topic not only in the macroeconomic sense but also on the firm-level (micro-level) as taxes are the primary source of cash outflow for a firm. The bottom-line performance is very much related to the taxes, and it directly affects the shareholder's and investors' wealth. Therefore, firm uses CTA strategies to retain the amount that the firm needs to pay to the government (Chen & Tsai, 2018; OECD, 2013). CTA is part of organizational strategy, especially in large organizations (Armstrong et al., 2015; Wang et al., 2020). On the macro level, the CTA behavior of the firms reduces the revenues of the government and indirectly affects society as a whole by reducing the government effectiveness in fulfilling the basic needs of the people in the society. The governments around the world are aware of this economic issue, but tackling this problem is not straightforward (Sayidah & Assagaf, 2019). So, it is crucial to investigate the firms' CTA behavior as it affects not only the firm itself but also the society (Khuong et al., 2020; Minh Ha et al., 2021).

In literature, early studies on CTA premise their argument on the traditional perspective of CTA that CTA is a value-enhancing activity because it reduces cash flow to the government from the organization. Therefore, previous studies assume that CTA is beneficial for the shareholders, and managers should pursue CTA activities (Shackelford & Shevlin, 2001). However, the agency theory proposes that the managers' decisions regarding CTA behavior may represent their own interests rather than the interest of shareholders. Slemrod (2004) and Crocker and Slemrod (2005) argued that the interest of the manager and the shareholders could differ if the negative impact of CTA needs to be borne by the management instead of shareholders. Desai and Dharmapala (2006) build their argument regarding CTA and firm value (*hereafter referred to as FV*) relationship based on agency theory. In their argument, it is contended that self-interested managers create an opaque environment that facilitates them in recording transactions that reduce taxes and use additional resources for their own benefits. This argument supports a negative association between CTA and FV, but the presence of strong corporate governance (*hereafter referred as CG*) controls the negative effect of CTA.

Hence, the above discussion about the conceptual framework of CTA and FV relationship suggests that CG is vital in determining the association between CTA and FV. In literature, different researchers tested the moderating effect of different frictions of CG. Shen et al. (2021) claimed that board independence (*hereafter referred to as BI*) has a detrimental effect on CTA. Richardson et al. (2013) also found that audit committee and independent directors moderate the relationship between CTA and FV. Similarly, Armstrong et al. (2015) also found that BI is negatively related to CTA and mitigates the

agency problem. However, compared to developed nations, the efficiency of the CG mechanism in the context of Pakistan is weak (Waheed & Malik, 2019; Sheikh et al., 2018). It is evident not only on the firm level but also on the macro-level due to different institutional settings, socio-economic behavior, unstable political conditions, and legal environment, as highlighted by Transparency International and World Bank governance index (Raymond, 2019). The majority of the firms in Pakistan is family-owned or has high concentrated ownership, so; the focus of shareholders in such firms is self-centered (Waheed & Malik, 2019). Thus, in high concentrated firms, the management can use additional resources generated from CTA for their own benefits. Therefore, it is proposed that the existence of BI will reduce the rent extraction behavior of the management, which will also reduce the negative association of CTA on FV (Khuong, 2020).

The relationship between CTA and FV has been studied in the literature from the perspective of developed countries, but it is an under-researched issue from the perspective of developing countries (Saragih & Ali, 2021). Furthermore, the inconclusive results in the literature provide the opportunity to further investigate the association (Salihu & Kawi, 2021). Ying et al., (2017) argued that cost attached with CTA overweight the benefits, thus negatively impacting the FV. The same result has been found by (VU et al., 2021) in the context of Vietnam. On the contrary, Tang (2017) provides evidence regarding positive association in CTA and FV in China. Therefore, the current study examines the association between CTA and FV with moderating role of CG in Pakistan. This study is important because Pakistan is facing a large deficit in the budget due to less tax collection from corporate and other tax-paying entities, and CTA is the major culprit in this regard. According to FBR, there are about 81,493 firms registered with SECP, but only 30,875 firms file returns (Amin & Rehman, 2019). On the other hand, CTA also creates risk due to information asymmetry between shareholders and managers which affects the firm market value (Ftouhi & Moez, 2019) so; the phenomenon of CTA in Pakistan needs to be studied to understand the consequences of CTA on the firm level which is less explored. Further in light with the significant role of CG discussed above, the moderating role of different internal corporate governance also needs to be studied for providing better practical implications to the practitioners are relevant authorities (Wang et al., 2020). Therefore, following are the objectives of the study:

- To investigate the impact of corporate tax avoidance on firm value.
- To investigate the moderating role of board independence in context of tax avoidance and firm value.

In the current study, we use three different proxies of CTA to measure its effect on FV, while BI is used to test the moderating effect. The proxies to measure CTA include Cash Effective Tax Rate (Cash\_ETR), Current Effective Tax Rate (Current\_ETR) and Permanent Book-Tax Differences (BTD\_TAX). Tobin's Q is used to calculate a company's value, and the percentage of independent directors on a board of directors is used to determine the board's independence. The System GMM estimators are used to estimate the model due to potential endogeneity problems that surface due to dynamic panel and reverse causality. The findings indicate that CTA has a detrimental effect on company value, and these results are consistent across all three proxies. It is also found independent directors moderates the relationship between CTA and FV and alter the sign of the coefficient from negative to positive, hence improves the FV.

Additionally, the current study adds to the body of knowledge in a number of different ways. Firstly, most of the studies in literature are conducted in the context of developed nations, but this study provides evidence from the emerging economy i.e. Pakistan, where the studies on relationship between CTA and FV are scarce. Secondly, this study utilizes a more robust methodology to test the hypothesis by incorporating the dynamic structure of the panel data and the problem of unobserved heterogeneity and potential endogeneity. Thirdly, to the best of my knowledge, this is the first study that uses three different proxies of CTA to check the relationship between CTA and FV, which provides more robust results in the context of Pakistan. Fourthly, this study utilizes a large set of data from 2005 to 2019 as compared to other studies<sup>2</sup>, which provides more robust results by considering CTA activities throughout the large time period. Fifthly, this study uses BI to test the moderating impact of board structure on the relationship between CTA and FV in Pakistan.

### **Literature Review**

This section of the study discusses the definition and theories related to CTA. It also includes the literature regarding CTA, CTA and FV relationship and the moderating role of CG.

#### **Corporate Tax Avoidance**

A corporate income tax is a type of direct tax levied by country's tax authorities on the net income of a corporation or a business entity (McLure, 1981). Tax is a cost for the business, and it negatively impacts the bottom-line performance of the company. In the short run, lower revenues impact cash flow as well as its assets of the company, which also

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<sup>2</sup> For example VU et al. (2021);Khan et al. (2020); Khuong et al. (2020)

influence overall worth of the business. Companies, as a result, employ a variety of tactics to reduce the amount of tax payable to the government (Desai & Dharmapala, 2009). The term "corporate tax avoidance (CTA)" is used to characterize this issue in the literature.

However, there is no universally accepted definition of CTA, since different authors describe it differently depending on their point of view. In literature, CTA is explained as behavior, activities, and transactions that adhere to the legal framework but modify the law's intent in order to comply, with the purpose of reducing tax liability (for example, Hanlon & Maydew, 2008; Hanlon & Heitzman, 2010; Cheng, Huang, Li, & Stanfield, 2012; Manganaris, Spathis, & Dasilas, 2015; Bird & Davis-Nozemack, 2018; Lanis, Richardson, Liu, & McClure, 2018; Payne & Raiborn, 2018). However, this study adopts the definition of Dyreng et al. (2008, p.62). They described CTA as "all transactions that can affect a firm's explicit tax liability". Literature studies have revealed that CTA has an association with firm value and various authors examined this association in different contexts (Desai & Dharmapala, 2009; Chen et al., 2014; Dyreng et al., 2016; Zhang et al., 2017; Khuong et al., 2020; Minh Ha et al., 2021; Hasan et al., 2021).

### **Theoretical Perspective of Corporate Tax Avoidance and Firm Value**

There are two different perspectives or theories that can explain or provide a theoretical framework for the association between CTA and FV. The traditional perspective considers CTA activities as value-enhancing for the shareholders if there are no other risks attached with the additional cash flow generated from CTA activities, so; it predicts a positive association between CTA and FV. This theory assumes that the interest of managers is aligned with the interest of shareholders to maximize the FV. They do so by reducing cash outflow in the form of tax payments to government. The basic idea behind this theory is drawn from the work of (Allingham & Sandmo, 1972).

The second perspective drew its line from the work of (Desai & Dharmapala, 2009; Wahab & Holland, 2012). This concept predicted a negative association between CTA and FV, which is based on agency theory (Park et al., 2016). The agency theory is a baseline theory to explain the agency problem between agents and managers. This theory argues that managers favor to pursue their own interests instead of the interests of the shareholders by diverting the resources for the organization to gain their personal benefits. This perspective provides a more in-depth view of CTA and FV relationship by incorporating the CG mechanism. CG role in explaining tax avoidance behavior of management is very crucial. Desai et al. (2007) argued that the firm with strong CG depicts a positive relationship between CTA and FV.

### **Previous Studies on Corporate Tax Avoidance and Firm Value**

In the literature, it has been evidenced that CTA has both positive and negative consequences on the present and future performance of the firm (Belotti et al., 2021; Wang et al., 2020). For instance, in the context of Vietnam, Vu and Le (2021) discovered a positive association between tax planning and financial viability. In the same manner, Inger (2013) also found positive impact of CTA on FV by using different CTA proxies. Hasan et al. (2021) also found a positive relationship between CTA and FV in high OC firms. In contrast, extensive empirical evidence has been accumulated in the literature to support the notion that CTA has a negative impact on company performance (Khuong et al., 2020). Some of the basic reasons for this negative relationship include non-financial costs attached with CTA activities like reputation cost, managerial rent extraction, and information asymmetry (Nafti et al., 2020; Cook et al., 2017).

Similarly, Desai and Dharmapala (2009) concluded that CTA has a negative but insignificant relationship with FV. However, they found a positive impact of CTA on FV on firms that have a strong CG mechanism. Kim et al., (2011) inspected the impact of CTA on future share price crashes. They came to the conclusion that CTA allows management to hide the negative news for a longer time period, and when the bad news bubble burst, the stock price fell dramatically. In the same context, Gulzar et al. (2018) stated that the stock market negatively reacts towards the news of the CTA behavior of the firm. Armstrong et al. (2015) conducted a study of enterprises from 2007 to 2011 and discovered a negative correlation between CTA and board independence. The study conducted by Chen et al., (2014) on Chinese firms for the period from 1995 to 2008 found a negative relationship between CTA and FV. This result shows that Chinese investors do not respond positively to CTA behavior of firms. Khuong et al. (2020) also found a negative relationship between different CTA proxies and FV in the context of Vietnam. In the same context Minh Ha et al. (2021) also found a negative impact of CTA on FV. This leads to the development of the following hypothesis for the study.

*H<sub>1</sub>: Corporate tax avoidance negatively impacts the firm value in Pakistan.*

### **The Moderating Role of Board Independence**

Wahab et al. (2017) emphasized the importance of the moderating role of CG in regard to the relationship of CTA and FV. They postulated that in the perspective of the manager's CTA behavior, the CG mechanism plays an important role to monitor managerial behavior. The diversification in the board structure mechanism improves the agency problem. Fama (1980) argued that independent directors force the board of directors to pursue shareholder interests. Minnick and Noga (2010) found no conclusive evidence that the board has an association with CTA in the context of tax outcome. On the

contrary, finding by Salihu and Kawi (2021) provide confirmation that a higher percentage of independent directors on board decreases the CTA activities of the firms. The further evidence provided by Lanis and Richardson (2018) support these finding that outside directors improve the CTA behavior of the firms. On the other hand, it is argued that the existence of independent directors on the board snub the rent extraction of the management, which reduces the negative risk attached with CTA. Therefore, the BI is positively associated with CTA. The findings of Richardson et al. (2015) support the above-discussed argument and identify that a higher percentage of independent directors positively influences CTA. In the same instance, McClure et al. (2018) found the significant association between CTA and BI. Though, the variations in the results can be attributed to the different economic and socio-economic conditions of the respective samples. If it is assumed that independent directors are working in the interest of shareholders, then the association between CTA and BI will be positive in financial distress firms (McClure et al., 2018).

*H<sub>2</sub>: Board independence moderates the relationship between CTA and FV in Pakistani firms.*

## **Methodology**

### **Data and Sample**

The data has been hand collected from the annual financial statements of the non-financial firms. The sample of the study includes 210 non-financial firms listed at Pakistan Stock Exchange (PSX) with a total 2,637 firm-year observations in an unbalanced panel data form. The time period of the study ranges from 2005-2019. We excluded the financial firms from the sample as the financial firms are more regulated and have special reporting requirements (Gaaya et al., 2017).

### **Method for Estimation**

When the lag term of the dependent variable is included as an independent variable in the model, the resulting model is called a dynamic model. This study assumes that current market value of firm are the function of the previous market value. Therefore, considering the dynamic nature of panel data and potential endogeneity in the model, the use of OLS and the fixed or random-effects model generates biased coefficients (Kirkpatrick & Radicic, 2020). The assumption of autocorrelation in standard OLS models assumes that the error term is independent and does not have any relationship with the lag of the error term. However, in the dynamic panel models, the error term is serially correlated despite the assumption of no autocorrelations. However, the lagged dependent variable is often correlated with the error term (Nickell, 1981). In this situation, the GMM

estimators are proposed to eliminate the autocorrelation of lagged dependent variable with error term by introducing first-order differencing (Arellano & Bond, 1991). However, Blundell and Bond (1998) recommended using the augmented form of difference-GMM, called System-GMM, for robust results. Therefore, the system-GMM is the best estimator and used for the current study. The study utilizes the user-written command of Roodman (2009) to implement the methodology of Blundell and Bond (1998) to estimate the parameter in STATA.

### Econometric Models

$$TQ_{i,t} = \beta_1 TQ - 1_{i,t} + \beta_2 Cash\_ETR_{i,t} + \beta_3 Size_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Growth_{i,t} + \beta_6 OCF_{i,t} + \beta_7 PPE_{i,t} + Year\ dummy + \varepsilon_{i,t} \dots\dots\dots 1$$

$$TQ_{i,t} = \beta_1 TQ - 1_{i,t} + \beta_2 Current\_ETR_{i,t} + \beta_3 Size_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Growth_{i,t} + \beta_6 OCF_{i,t} + \beta_7 PPE_{i,t} + Year\ dummy + \varepsilon_{i,t} \dots\dots\dots 2$$

$$TQ_{i,t} = \beta_1 TQ - 1_{i,t} + \beta_2 BTD\_TAX_{i,t} + \beta_3 Size_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Growth_{i,t} + \beta_6 OCF_{i,t} + \beta_7 PPE_{i,t} + Year\ dummy + \varepsilon_{i,t} \dots\dots\dots 3$$

$$TQ_{i,t} = \beta_1 TQ - 1_{i,t} + \beta_2 Cash\_ETR_{i,t} + \beta_3 BI_{i,t} + \beta_4 Cash\_ETR \times BI_{i,t} + \beta_5 Size_{i,t} + \beta_6 Lev_{i,t} + \beta_7 Growth_{i,t} + \beta_8 OCF_{i,t} + \beta_9 PPE_{i,t} + Year\ dummy + \varepsilon_{i,t} \dots\dots\dots 4$$

$$TQ_{i,t} = \beta_1 TQ - 1_{i,t} + \beta_2 Current\_ETR_{i,t} + \beta_3 BI_{i,t} + \beta_4 Current\_ETR \times BI_{i,t} + \beta_5 Size_{i,t} + \beta_6 Lev_{i,t} + \beta_7 Growth_{i,t} + \beta_8 OCF_{i,t} + \beta_9 PPE_{i,t} + Year\ dummy + \varepsilon_{i,t} \dots\dots\dots 5$$

$$TQ_{i,t} = \beta_1 TQ - 1_{i,t} + \beta_2 BTD\_TAX_{i,t} + \beta_3 BI_{i,t} + \beta_4 BTD\_TAX \times BI_{i,t} + \beta_5 Size_{i,t} + \beta_6 Lev_{i,t} + \beta_7 Growth_{i,t} + \beta_8 OCF_{i,t} + \beta_9 PPE_{i,t} + Year\ dummy + \varepsilon_{i,t} \dots\dots\dots 6$$

### Variables Operationalization

#### Dependent Variable

Performance of the firm is calculated through the most commonly used measure, i.e. Tobin's Q as used by Khaoula and Moez (2020). It is defined as "the ratio of the market value of assets to the book value of the assets"(Singh et al., 2018, p.177). Tobin's Q is preferred as it is less affected by the measurement errors, and it includes the adjustment for risk (Hasan et al., 2021).

#### Independent Variables

Previous research by Dyreng et al. (2010) highlights the lack of consensus among scholars and practitioners with regards to measurement of CTA. However, in the literature, following three proxies are often used: The Current ETR, Cash ETR and book-tax-difference (BTD). The first and second measure is based on the effective tax rate, while the



third one is based on the book-tax- differences. In line with the work of Cheng et al. (2012) and Hasan et al. (2021), the current ETR and cash ETR is calculated as follows:

$$\text{Current ETR} = (\text{Total tax expense}_{i,t} - \text{Deferred tax expense}_{i,t} / \text{Pretax income}_{i,t})$$

It is an inverse measure of CTA and reflects higher CTA in the case of lower Current ETR (Frank et al., 2009). In contrast, another way of measuring CTA is Cash ETR and calculated as ratio of cash taxes paid to pretax income (Hasan et al. 2021).

$$\text{Cash ETR} = \frac{\text{Cash taxes paid}_{i,t}}{\text{Pretax income}_{i,t}}$$

The third measure of CTA is book-tax difference (BTD). BTD represents the difference between book income and taxable income (Lee et al., 2015). As tax able income is not directly observable hence, it is calculated by dividing current taxes with statutory tax rate. It is argued in literature that BTD not only reflect the tax avoidance but also includes the elements of earnings management. Therefore, to eliminate the effect of earnings management from BTD, this study follows the modified work of Desai and Dharmapala (2006) and methodology of Kothari et al. (2005). The Deasi and Dharmapala measure of BTD incorporates total accruals (TA) as a representative of accrual earning management. However, this study uses the discretionary accruals (DA) instead of TA because the DA is more consistent with the orthogonal part of the book-tax differences and is considered a suitable proxy for measuring CTA (Khoun et al., 2020). We used a two-step approach to measure CTA related to accrual management. First, the DA is calculated by following the Kothari et al. (2005), from the residual of the following equation:

$$\frac{TAC_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta(REV_{i,t} - AR_{i,t})}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \beta_4 \frac{ROA_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad \dots\dots\dots 7$$

$$DA_{i,t} = TAC_{i,t} - NDA_{i,t} \quad \dots\dots\dots 8$$

Where:

$TAC_{i,t}$  = Total Accruals

$DA_{i,t}$  = Discretionary Accruals

$NDA_{i,t}$  = Non – discretionary Accruals

$A_{i,t} - 1$  = Total assets – 1

$\Delta REV_{i,t}$  = Change in revenue from previous year

$\Delta AR_{i,t}$  = Change in accounts receivables from previous year

$PPE_{i,t}$  = Gross property, plant and equipment

$ROA_{i,t}$  = Net income/LTA

After regressing equation (9), we calculated the level of accrual-based earnings management. The residual of equation (10) has been used as the proxy for CTA, it is the part that cannot be explained by the accrual-based earnings management.

$$BTD_{i,t} = \beta_1 DA_{i,t} + U_j + e_{i,t} \quad \dots\dots\dots 9$$

$$CTA_{i,t} = U_j + e_{i,t} \quad \dots\dots\dots 10$$

Where:

$BTD_{i,t}$  = Book – tax difference for firm  $i$  in year  $t$  divided by previous year's total assets

$DA_{i,t}$  = Discretionary accruals for firm  $i$  in year  $t$  divided by previous year's total assets

$uj_{i,t}$  = average value of the residual for firm  $i$  over the sample period

$\varepsilon_{i,t}$  = Error term

$CTA_{i,t}$  = is esimated from the equation (9)and used as the proxy for CTA

Table 1: Control Variables and Moderating Variables Measurement

Control variables	Measurement
Firm size	Log of Total Assets
Leverage	$\frac{\text{Total Assest}}{\text{Total Laibilties}}$
Growth	$\frac{\text{Current year operating revenues} - \text{Previous year operating rev}}{\text{Operating reveues of previous year}}$
Tangibility (PPE)	$\frac{\text{Net Plant, Property and Equiepmnt}}{\text{Total Assets}}$
Operating Cash Flow	$\frac{\text{Operating Cash Flow}}{\text{Total Assets}}$
Moderating Variable	
Board Independence	$\frac{\text{Number of idependent directors on the board}}{\text{Total number of directors}}$

## Results and Discussion

Firstly, summary statistics of variables are provided in table 2. Subsequently, the impact is tested using System-GMM, while the parameters are calculated on the basis of dynamic nature of panel data and possibility of endogeneity.

### Descriptive Statistics

Table 2 presents the descriptive statistics of the data used in the study. Total numbers of observations used in the study are 2,637 which comprise of 210 firms from 26 industries. The performance proxy used in the study is Tobin's Q which is found to be overvalued since it has a mean of 1.016, which posits that on average the market value in comparison to book value of assets is 1.016 of firms listed at PSX. The mean value of cash ETR shows that, on average, firms in Pakistan are paying 33% cash taxes against their annual income. In the same manner, the current ETR represents that, on average, firms in Pakistan are paying 27% tax on their current year income. Book-tax-Difference (BTD) tax

posits a mean value of 0.028, which represents that, on average, book-tax-differences of firms 0.028. Leverage has the mean value of 0.524, which represents that averagely assets 52.1% of the assets in Pakistani firms are financed through leverage. The mean value of growth is 0.166, which represents that sales growth in sampled firms is 16.6%. The mean value of tangibility (PPE) and operating cash flow is 0.703 and 0.078 respectively. The board independence which is a proxy for CG has a mean value of .175, which represents that average percentage of independent directors in BOD is 17.5%.

*Table 2: Summary Statistics*

Variables	Obs	Mean	Std. Dev.	Min	Max
TQ	2637	1.016	1.969	0.0007	18.61
Cash_ETR	2637	0.33	0.358	-4.942	1.997
Current_ETR	2637	0.27	0.326	-7.405	2.879
BTD_TAX	2637	0.028	0.122	-0.309	3.789
Firm Size	2,637	22.275	1.618	15.445	27.365
Leverage	2637	.524	.241	.007	5.63
Growth	2637	0.166	.383	-0.999	9.164
PPE	2637	0.703	0.372	0.000	7.431
OCF	2637	.078	.127	-0.687	0.68
BI	2637	.175	.187	0	1

### **System-GMM**

Literature has revealed three sources of endogeneity in any econometric model. The first is the existence of reverse causality among the dependent and independent variables, the second source is omitted variable bias and the third source is the measurement error in the variables (Wooldridge, 2005). However, our major concern is with the existence of reverse causality among CTA and FV. It is noted in literature that endogeneity is a major problem in tax management studies (Annuar et al., 2014). The System-GMM findings for models 1, 2, and 3 are given in Table 3. The findings of models 1, 2, and 3 postulates that lagged dependent variable is positive and statistically significant with a coefficient value of 0.88649, 0.89724 and 0.89814, respectively. It shows that the previous value of TQ is positively associated with the current value of TQ. Cash ETR, Current ETR, and BTD tax all have a negative connection with the FV as assessed by Tobin's Q. Cash ETR, Current ETR, and BTD tax has coefficient values of -0.12555, -0.01383, and -0.10117, respectively. This indicates that a one-unit change in cash ETR, current ETR, or BTD tax results in a change by -0.12555, -0.01383, or -0.10117 units in FV, respectively. Cash ETR and Current ETR are the inverse measures of CTA so, the negative association between Cash ETR and Current ETR represents that decrease in ETR

negatively impacts the FV. In contrast, the negative impact of BTD on FV represents that an increase in BTD decreases the FV. The reason for this negative impact can be associated with the rent extraction behavior of the management (Earnings management). These findings regarding negative relationships between CTA and firm value is consistent with the results of (Desai et al., 2007; Wang, 2010; Soepriyanto, 2018; Kirkpatrick & Radicic, 2020; Khuong et al., 2020; Safiq et al., 2021). The results of the study contradict the results of Wlison (2009); Inger (2013); Yorke (2016); Santa and Rezende (2016); Khaoula and Moez (2019); Tarmidi and Murwaningsari (2019) as they found a positive relationship between CTA and firm value. The studies with positive effect are mostly conducted in the developed nations. However, in the context of developing economies, authors find a negative association between CTA and firm value, this negative association is due to the fact that capital markets in developing nations are not mature and unable to protect the rights of the investors. Therefore, investors in the market negatively react to the CTA activities of the firms as these activities not only increase the rent extraction behavior of the managers but also negatively impact the economy as a whole.

The results of control variables show that firm size, debt, and tangibility, significantly impact the FV, and this relationship is negative. On the contrary, growth and operational cash flow is also significant but positive. The results confirmed hypothesis H<sub>1</sub>, that in the absence of CG, CTA has a detrimental effect on FV. The results of models #1, #2, and #3 corroborate those of Zhang et al., (2017); Khuong et al., (2020); and Nafti et al (2020). All three models are tested for post-estimation using the AB test for second-order autocorrelation, whereas for instrument validity testing, Hansen J-test is used. Both tests have a P-value larger than 0.05, indicating the absence of second-order autocorrelation which posits that the used instrument is valid.

*Table: 3 Regression analysis of model 1, 2 and 3*

Variables	Model 1 (TQ)	Model 2 (TQ)	Model 3 (TQ)
L.TQ	0.88649*** (0.004702)	0.89724*** (0.000391)	0.89814*** (0.00027)
Cash_ETR	-0.12555** (0.062456)		
Current_ETR		-0.01383** (0.00617)	
BTD_ETR			-0.10117*** (0.00524)
Firm Size	-0.01139*** (0.00619)	-0.004857*** (0.00106)	-0.00526*** (0.00119)
Leverage	-0.15545*** (0.07204)	-0.17746*** (0.00858)	-0.16405*** (0.00414)
PPE	-0.06539*** (0.00435)	-0.05759*** (0.00575)	-0.05500*** (0.00316)
Growth	0.04684*** (0.02947)	0.04488*** (0.00441)	0.05026*** (0.00437)
OCF	0.44302*** (0.09946)	0.80720*** (0.01097)	0.80981*** (0.00944)
Year Dummies	Yes	Yes	Yes
No. of Obs.	2230	2230	2230
Group/Instrument	210/68	210/80	210/93
AR(2)	0.327	0.395	0.400
Hansen Statistic	0.124	0.098	0.088

\*\*\* represent 1%, \*\* represents 5%, and \* represents 10% significance levels. Whereas in parenthesis, there are standard errors whilst p-values are of AR(2) and Hansen statistic.

System-GMM results for models 4, 5, and 6 are summarized in Table 4. The results of models 4, 5, and 6 reveal that board independence moderates the relationship of CTA and FV. The negative coefficients of Cash ETR, Current ETR and BTD taxes become positive with coefficient values of 0.06584, 0.40351, and 0.56772, respectively. In all three models, BI coefficient is also significant and the impact is positive which implies that BI is influencing FV positively. However, the interaction term between board independence and all three corporate CTA proxies is negative and significant, yet the existence of interaction results in positive coefficients for all three CTA proxies. The positive moderation of independent directors represents that firms with robust CG structure snub the rent extraction behavior of the management by increasing the monitoring on board level. These findings support the narrative of agency theory advanced by (Deasi & Dharamapla, 2006; Deasi et al., 2007). So, we approve the second hypothesis H<sub>2</sub>, that the BI moderates the relationship between CTA and FV. These findings are consistent with the

results of Garca-Meca et al., (2021); Nafti et al., (2020); Khuong et al., (2020); and Zhang et al., (2017). Post estimation is done as mentioned in previous models.

*Table 4: Regression analysis of model 4,5 and 6*

Variables	Model 4 (TQ)	Model 5 (TQ)	Model 6 (TQ)
L.TQ	0.90597*** (0.00057)	0.91264*** (0.00218)	0.89745*** (0.00034)
Cash_ETR	0.06584*** (0.00965)		
Current_ETR		0.40351*** (0.09893)	
BTD_ETR			0.56772*** (0.01643)
BI	0.31086*** (0.02364)	0.41295*** (0.14906)	0.25066*** (0.00696)
BI*Cash_ETR	-0.47581*** (0.06247)		
BI*Current_ETR		-1.64033*** (0.55598)	
BI*BTD_TAX			-0.32254*** (0.02624)
Firm Size	-0.01103*** (0.00137)	-0.014269*** (0.00434)	-0.01116*** (0.00106)
Leverage	-0.05446*** (0.00632)	-0.05280*** (0.02245)	-0.10094*** (0.00390)
PPE	-0.03794*** (0.00505)	-0.03489*** (0.01731)	-0.06273*** (0.00328)
Growth	0.04565*** (0.00577)	0.03916 *** (0.01519)	0.02213*** (0.00337)
OCF	0.78948 *** (0.02079)	0.64534*** (0.06859)	0.67002*** (0.00760)
Year Dummies	Yes	Yes	Yes
No. of Obs.	2230	2230	2230
Group/Instrument	210/92	210/94	210/93
AR(2)	0.517	0.424	0.483
Hansen Statistic	0.093	0.183	0.278

\*\*\* represent 1%, \*\* represents 5%, and \* represents 10% significance levels. Whereas in parenthesis, there are standard errors whilst p-values are of AR(2) and Hansen statistic.

### Conclusion and Implication

The study aims were twofold, first to check the impact of CTA on FV and investigation of moderating role of BI in former relationship. The findings of the first objective reveal that CTA has a negative impact on FV. These results are consistent with

the findings of Desai and Dharmapala (2009); Chen et al. (2014); York et al. (2016); Yee et al. (2018); Khuong et al. (2020), and Nafti et al. (2020). This paper also checks the robustness of this relationship by using three different proxies of CTA, and results are consistent across all three proxies. These results are consistent with the arguments of agency theory. While the findings of the second objective postulate that direct impact of board independence is positive on FV, which supports our proposition that the BI act as a balancing tool and reduces the rent extraction behavior of the firm, which positively impacts the firm value. We further provide evidence that BI moderates the relationship between CTA and FV by reducing the negative impact of CTA. This also implies that independent directors reduce the agency cost attached with the CTA behavior in the firms. We also expand the existing literature regarding CTA, FV and CG nexus by giving evidence that BI mitigates the negative impact of CTA.

This study also provides some practical implications to the management, investors and tax authorities. Firstly, management of the firms can get a better picture that how capital market reacts to its tax avoidance behavior and how the negative impact can be reduced by better implementing the corporate governance mechanisms. Secondly, investors and security analyst can also use the findings to value a firm by incorporating the risk attached with the tax avoidance behavior of the firms. They can also incorporate the corporate governance information of the firm to evaluate the security pricing. Thirdly, this study provides an evidence to the tax authorities that firms use different types of techniques to do tax avoidance so, the policies can be developed to reduce the tax avoidance behavior of the firms. However, this paper also has some limitations that provide the path for further exploration. The first limitation of this study is that it only considered non-conforming CTA; future studies can incorporate the conforming element of CTA so the inclusive impact of CTA activities can be tested on FV. Secondly, study results can only be generalized in Pakistani firms' context; further studies can include international companies and MNCs. Thirdly, this study only considered the public listed companies on PSX; further study can explore the CTA behavior of small and medium enterprises.

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