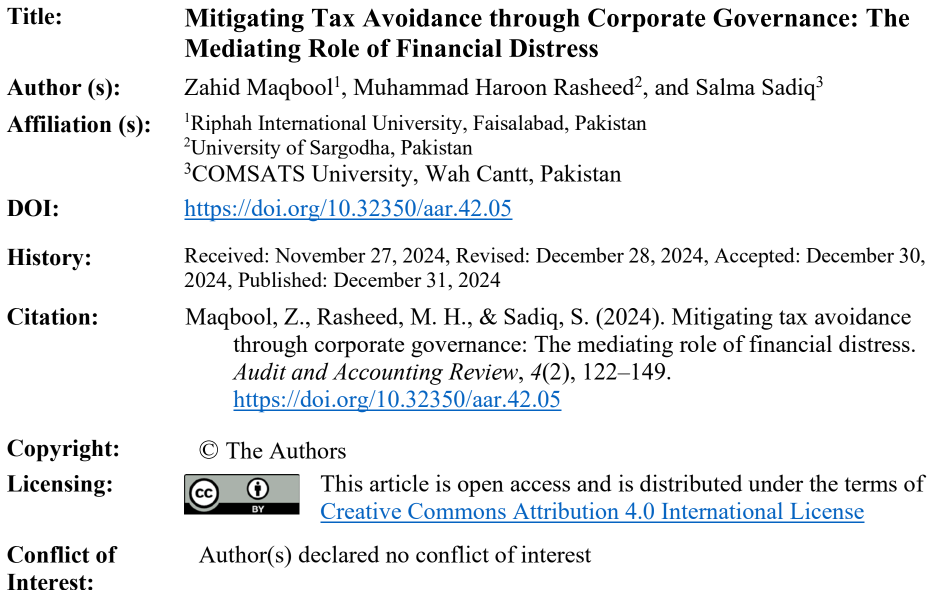
Audit and Accounting Review (AAR)
Volume 4 Issue 2, Fall 2024
ISSN$_{(P)}$: 2790-8267 ISSN$_{(E)}$: 2790-8275
Homepage: https://journals.umt.edu.pk/index.php/aar

Article QR



Title: **Mitigating Tax Avoidance through Corporate Governance: The Mediating Role of Financial Distress**

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DOI: https://doi.org/10.32350/aar.42.05

History: Received: November 27, 2024, Revised: December 28, 2024, Accepted: December 30, 2024, Published: December 31, 2024

Citation: Maqbool, Z., Rasheed, M. H., & Sadiq, S. (2024). Mitigating tax avoidance through corporate governance: The mediating role of financial distress. *Audit and Accounting Review*, *4*(2), 122–149. https://doi.org/10.32350/aar.42.05

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Conflict of Interest: Author(s) declared no conflict of interest

A publication of
The School of Commerce and Accountancy
University of Management and Technology, Lahore, Pakistan

Mitigating Tax Avoidance through Corporate Governance: The Mediating Role of Financial Distress

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Abstract

The post-pandemic era has brought Pakistan into a spiral of economic instability and downturn, making taxation a vital avenue for the economic survival of country. One of the key avenues of revenue collection for an economy is its manufacturing sector. Therefore, the current study analyzed the facilitating role of financial distress to examine the relationship amongst governance mechanisms and tax avoidance. The sample comprised data collected from 167 firms for 13 years, from the time period of 2011-2023. Panel data Generalized Method of Moment (GMM) regression model is utilized for analysis. Findings indicate that the firms in Pakistan tend to get involved in tax avoidance during economic distress and effective corporate governance may significantly reduce this behavior. The mediation analysis established that the association of board structure and tax avoidance is channeled through financial distress. This association highlighted those weak corporate mechanisms in a firm leading to financial distress which, in turn, leads to tax avoidance behavior. Hence, addressing corporate governance issues in the firm may also indirectly influence the tax avoidance behavior in the corporate sector of Pakistan. Furthermore, the control variables including firm size (FS), market-to-book ratio, return on assets (ROA), and leverage (LEV) have non-significant influence on tax avoidance. The study provided some unique implications related to tax avoidance, particularly with context to a struggling economy, such as Pakistan. These findings may also help tax officials to be more cautious of the firms that have weak indicators of corporate governance. Furthermore, in weak economic scenarios, such as Pakistan, tax avoidance practices tend to increase across the business sectors. Lastly, this association between tax

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management and financial distress would enable the investors' needs to assess premium cash flow and the risk of capital costs.

***Keywords*: corporate governance, financial decisions, financial distress, tax avoidance**

Introduction

The taxation system is often regarded as the lifeblood of a modern economic framework, underpinning nations' financial health and stability (Whiteside, 2023). An efficient and effective taxation system is a mandatory part of economic survival for any country. It serves as a basic source of government income. However, it is often subjective, and a system tailored to an economy does not necessitate success in every demography. Therefore, the structure and efficiency of taxation systems differ significantly across economies (Balasoiu et al., 2023). This disparity has made it a pivotal financial research point to identify and foster a more contextualized understanding. A strengthened taxation system is particularly vital for Pakistan, a country with one of the highest debt-to-GDP ratios globally and has narrowly escaped an economic default (Rasheed & Khalid et al., 2024). Moreover, the existing taxation system in Pakistan makes it among the lowest contributors to tax-to-GDP ratios worldwide. The system relies heavily on indirect taxation as the primary source of revenue. This further highlights the need to examine its taxation system. Therefore, the current study aimed to explore this issue further. Moreover, one of the most significant revenue sources for developing economies is corporate taxation (Kaur & Rani, 2021).

The fragile economic condition of Pakistan makes it vital to explore the organizational factors that instigate or antagonize corporate tax contributions. Furthermore, the country holds one of the lowest taxes to GDP ratio globally (Kumar et al., 2024). Therefore, the resulting dynamics of this study may help policymakers devise mechanisms to maximize tax contributions, benefiting all stakeholders involved. Tax avoidance, while often coinciding with tax evasion, is a distinct term that involves legally permissible practices to reduce tax liabilities within the boundaries of accounting regulations (Duhoon & Singh, 2023). However, in economically vulnerable nations, such as Pakistan, even legal tax management practices of corporate governance may have significant consequences (Rasheed, Rasheed, & Farooq, 2024). The thin line separating tax management from

tax avoidance complicates this issue even further, since firms' managers consider taxes as an expense and always aim to minimize these costs. Existing literature highlighted some common strategies for tax avoidance in developing countries including profit shifting and bargaining for tax incentives. Subsidiaries of multinational corporations may transfer their dividends from jurisdictions with lower tax rates, while some firms manipulate prices to reduce sales tax liabilities.

Literature indicates that to discourage tax avoidance, effective corporate governance mechanisms can play a critical role (Duhoon & Singh, 2023). Effective governance mechanisms mitigate tax management practices by promoting transparency and accountability. Existing studies have found that the independent board structures and larger board sizes significantly reduce tax avoidance. Similarly, the independence of directors performs a critical role in overseeing management decisions, warranting that organizations prioritize ethical practices. CEO duality is another factor where one individual holds both the CEO and chairman roles and has also been identified as a factor influencing tax avoidance practices (Kovermann & Velte, 2019). Hence, an exploration of corporate mechanisms and tax behavior may provide a key insight into this relationship while highlighting contextual variations related to Pakistan.

Furthermore, literature also indicates that the most significant factor causing tax avoidance is financial distress. This aspect is also relevant due to the economic fragility in Pakistan. In the past decade, a sharp decline in exchange rates and worsening economic conditions have led to a constant threat of financial distress in Pakistan (Zahra et al., 2023). The negative consequences of financial distress are well-documented and it causes business organizations to struggle in order to meet their obligations due to persistent losses, rising costs, and declining profits (Kumar et al., 2024). Such economic conditions force business managers to get involved in tax evasion strategies in order to survive and mitigate financial outflows. Financially distressed businesses go beyond legal tax avoidance and are even found to manipulate accounting figures to project better financial health. This further increases the relationship between financial distress and tax evasion (Saragih & Ali, 2023), making it a particularly relevant and vital avenue to explore in the context of Pakistan.

Even though, the literature has extensively reported the dynamics of governance mechanisms, financial distress, and tax evasion, the mediating

nexus of governance remains unexplored in the context of Pakistan. As discussed earlier, a strong governance mechanism may aid in mitigating the degree of tax avoidance even in financially distressed businesses. Therefore, the model presents that financial distress plays a mediating role in connecting corporate governance and tax management practices. Understanding financial distress as a mediating variable allows to fill an important gap in the existing literature. Previous researches conducted on the subject mainly focused on developed countries. These studies did not take into consideration the peculiarities of developing economies, such as Pakistan, where weak legal systems, governance issues, political interference, and a large informal sector limit revenue mobilization.

The current study is critical to the tax avoidance strategies due to its focus on an emerging economy like Pakistan. It contributes new perspectives on the existing literature about the interactions among tax evasion, governance mechanisms, and financial distress. The current investigation offers a nuanced view on the relations between tax strategies, governance mechanisms, and financial distress for corporations, regulators, and policymakers. Furthermore, the study provides explanation of the dynamics of a struggling economy like Pakistan. The distinct nature of tax laws and practices would enable the stakeholders to better understand the dynamics of contextualized tax avoidance behavior.

The findings highlight some unique implications related to tax avoidance, particularly with context to a struggling economy like Pakistan. Additionally, it was also established that weak corporate governance mechanisms lead towards financial distress. The study presents that it is beneficial for investors, policymakers, and tax regulators to improve corporate governance mechanisms during the times of financial distress. These findings may also help tax officials to be more cautious of the firms that have weak indicators of corporate governance. Furthermore, in weak economic scenarios, such as Pakistan, tax avoidance practices tend to increase across the business sectors. Lastly, this association between tax management and financial distress would enable the investors' needs to assess premium cash flow and risk of capital costs. Conclusively, the study provides a comprehensive framework and significant practical implications for all stakeholders. The remaining article is divided into literature review, methodology, results and discussion, and conclusion section, respectively.

Literature Review

Financial Distress and Tax Avoidance

This study seeks to identify the factors that contribute to tax avoidance in a challenging economic context, such as Pakistan. The literature on this subject is varied, however, frequently yields inconclusive results concerning the antecedents of tax avoidance. Habib et al. (2020) reviewed the existing literature on financial distress and concluded that organizations experiencing significant profit increases generally report greater deferred tax expenses than those with lower profits. Furthermore, it was identified that a positive correlation exists between tax avoidance and financial distress. Thereby, it is necessary to examine the methods by which distressed firms may alter financial data to enhance reported income while concurrently reducing taxable income.

During financial distress, firms encounter significant challenges, such as maintaining credit ratings, consolidating debt, and preventing insolvency. Tax-saving measures represent a viable strategy for liberating capital to meet urgent requirements (Duhoon & Singh, 2023). During such periods, organizational managers may engage in earnings manipulation to present an inflated operating income, thereby delaying bankruptcy. These strategies frequently entail the assertive alteration of accounting policies, estimates, and disclosures, enabling firms to reduce their tax obligations. This assertion is consistent with the findings of the review by Habib et al. (2020), who determined that during financial crises, firms demonstrate an increased propensity for risk-taking and tax avoidance, motivated by a critical need for liquidity.

According to Habib et al. (2020), existing literature emphasizes that firms engaging in significant off-balance-sheet financing are at an increased risk of financial distress and demonstrate larger differences between book and taxable incomes. Hence, companies with greater book-to-tax variations report lower revenue and income relative to those with smaller discrepancies. Richardson et al. (2015) demonstrated that larger organizations tend to utilize more extensive tax management procedures. Although, these practices may yield short-term financial benefits, they can also incur higher administrative expenses, rendering larger firms susceptible to losses.

Existing literature consistently documents a significant association between financial distress and tax avoidance (Habib et al., 2020). Feizi et al. (2016) identified a significant positive correlation between the two, especially during periods of financial crisis. Richardson et al. (2015) observed that this relationship becomes more pronounced during economic instability. This is because distressed firms increasingly resort to tax avoidance strategies to mitigate escalating operational costs and restricted access to external financing. Recent findings by Dube et al. (2023) indicate that challenges related to financial distress, including rising operational costs and limited liquidity, compel firms to implement significant tax-saving strategies. These observations suggest that financial distress has a substantial impact on tax avoidance, especially in a vulnerable economic context, such as Pakistan.

H1: Financial distress is significantly associated with tax avoidance across manufacturing sector in Pakistan

Corporate Governance and Tax Avoidance

Often seen through the prism of agency theory, governance is essential to resolve management-related problems (Kovermann & Velte, 2019). This theory emphasizes many governance strategies indicated by past studies to reduce the conflicts of interest between shareholders and management. Good corporate governance not only helps to match managerial activities with shareholder interests, however, also improves present and future company performance. A fundamental component of corporate governance, board composition, serves as an internal monitoring and supervisory mechanism to protect shareholder interests (Khan et al., 2022). This supervisory role of board reduces opportunistic managerial behavior, therefore balancing the interests of managers and shareholders.

Extensive research has been conducted on board structure; its success correlates with monitoring efficiency, resulting in higher company performance. While research conducted by Core et al. (1999) linked bigger boards with more agency difficulties, others argued that smaller boards with a higher number of independent directors are more proactive and successful in safeguarding shareholder interests (Yermack, 1996). Small boards with more independence have shown to produce better governance results and higher stock returns (Minnick & Noga, 2010). Since independent directors improve monitoring and managers become more cautious in their decision-

making, these boards also show improved management of tax and earnings. Greater representation of independent directors' results in less tax avoidance behavior. Review of existing literature by Kovermann and Velte (2019) also indicated a negative association between board independence and tax avoidance in developing nations.

Another pillar of good governance is the chairperson's participation in board meetings and supervising duties. CEO duality, that is, combining the duties of chairman and CEO, has been discussed considerably. Advocates say it helps with decision-making and lessens any friction between the chairman and the CEO (Demirag et al., 2000). Agency theorists caution that this concentration of authority may cement managerial interests and compromise the board's capacity for efficient monitoring. CEO duality could also compromise the board's independence, affecting its capacity for governance and raising the possibility of dangerous behavior, such as tax avoidance (DeBoskey et al., 2019). Due to centralized decision-making and the CEO's vested interest in avoiding high-risk ventures, companies with a CEO serving dual responsibilities are less likely to attempt tax management (Minnick & Noga, 2010). Conversely, some studies also showed a positive correlation between CEO duality and tax aggressiveness, particularly in circumstances when the board's governance function is weakened and agency conflicts between managers and shareholders are heightened (Kovermann & Velte, 2019).

Tax management techniques can also be influenced by the ownership structure including institutional and managerial ownership. According to Frank et al. (2009), companies may have high book income together with low taxable income. Strengthening the link between the executive team and the board undermines the board's responsibility of governance which restricts its capacity to reject aggressive tax policies. CEO duality may worsen these practices (DeBoskey et al., 2019; Khan et al., 2021).

Empirical results repeatedly show a strong favorable link between tax management policies and governance practices. In settings, such as Pakistan, where governance issues are evident, the interaction among board structure, CEO duality, and tax avoidance becomes even more important. These patterns highlight the major influence of governance systems on the tax-related decisions of a company.

H2: Corporate governance is significantly associated with tax avoidance across manufacturing sector in Pakistan

Corporate Governance and Financial Distress

In preventing behaviors, such as tax management, corporate governance is a crucial structure which influences company conduct. Good corporate governance is linked to moral business conduct, which lowers the possibility of unethical behavior including dangerous and fraudulent actions (Gomes, 2016). Acting as efficient monitors that improve company compliance and general performance, independent boards are important in this paradigm (Khan et al., 2022; Khan et al., 2023). Studies often reveal that organizations with more board independence have lower degrees of organizational conflict (Gomes, 2016).

Apart from board independence, other governance metrics including board size and CEO duality greatly influence company success and tax avoidance. CEO duality, in which the CEO also acts as the board chairperson, centralizes decision-making authority, therefore lowering the possibility of participating in dangerous behavior, such as tax avoidance. When the CEO owns the company, their behavior corresponds with long-term organizational stability (Balasoiu et al., 2023; Kovermann & Velte, 2019; Minnick & Noga, 2010). Reflecting the larger governance setting, ownership structure including managerial and institutional ownership also influence tax management techniques.

H3: Corporate governance *is significantly associated with financial distress across manufacturing sector in Pakistan*

Mediation through Financial Distress

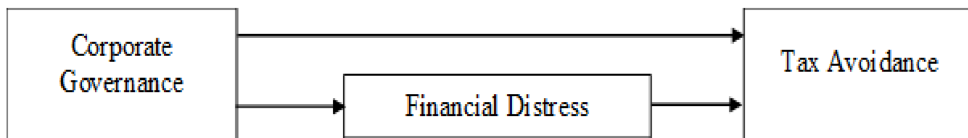
Previous studies have indicated that companies' tax management practices are influenced by financial difficulty (Habib et al., 2020; Kovermann & Velte, 2019). Under financial pressure, companies may resort to aggressive tax strategies as a survival tool, therefore increasing ethical and compliance issues. Still, the effectiveness of corporate governance systems may help to reduce these impulses. Strong governance structures improve business performance, help to reduce financial challenges, hence lowering tax avoidance practices. News hoarding theory and agency theory provide the theoretical basis for this mediation. Emphasizing the part governance plays in harmonizing interests, agency theory shows the conflict managers and shareholders create. According to

news hoarding theory, companies in financial crisis could hide negative information, therefore engaging in unethical behavior, such as tax dodging. Good company governance breaks this trend and sustains moral standards even under financial constraints. Expanded by Preacher and Hayes (2004), the mediation model suggested conforms to the recommendations proposed by Baron and Kenny (1986). This idea holds that financial crisis affects the relationship between tax avoidance and corporate governance. Strong corporate governance helps to reduce financial crisis; so, a decline in financial crisis reduces the incentives for tax evasion activities among managers. When one considers general economic hardships, the direct link between firm governance and tax avoidance reduces or disappears. Strong governance structures, according to the report, make businesses less likely to engage in tax avoidance, especially in challenging times financially. On the other hand, poor government aggravates financial crisis, thereby indirectly encouraging tax-evading techniques.

H4: Financial distress mediates the relationship between corporate governance and tax avoidance across manufacturing sector in Pakistan

Figure 1

Theoretical Model



Methodology

This section focuses on the sample and statistical process to ensure the reliability, validity, and generalizability of inferential findings. Furthermore, it also analyzes the measurement of financial distress alongside board structure and corporate tax avoidance. Overall, the paradigm is based on the epistemology of positivism following ontological assumption of objectivity. Therefore, it followed a deductive approach to arrive at a generalizable conclusion.

Sample

The current study focuses on manufacture entities across Pakistan. The reason to focus on manufacturing sector is their increased vulnerability to the economic situation in a country. Furthermore, the study alienated its

focus on the non-financial sector of Pakistan due to the varying rules and regulatory frameworks governing financial sector organizations (Khan et al., 2022). The study sampled data from firms listed at Pakistan Stock Exchange (PSX) based on data availability, access, and compliance with corporate regulatory requirements. Currently, more than 500 firms are listed at PSX, divided into 37 sectors. The study takes the data for 13 years, ranging from 2011-2023, ensuring alienation from global financial crisis of 2008 to provide contextual understanding of the associations while providing sufficient observations for statistical validity. The final sampled comprised 167 firms after considering for data availability, missing values, and outliers.

Measurement of Variables

All variables' data are collected from the annual financial statements of the selected firms. The income statement and balance sheet of the selected firms provided all the required information.

Tax Avoidance

A company's ability to pay the government less tax regularly is known as tax avoidance (Kovermann & Velte, 2019). Effective tax rate (ETR) and cash effective tax rate (CETR) are two proxies that would be used to quantify tax avoidance, which is a dependent variable in this study. One of the most often used tools to detect corporate tax evasion is the ETR, which shows the ratio of pre-tax profits to tax expenses (Lanis & Richardson, 2011). According to Dyreng et al. (2017), it takes advantage of any tax breaks available through tax shelters and legal loopholes. A firm's level of tax avoidance increases with decreasing ETR values.

$$Effective\ Tax\ Rate\ (ETR) = \frac{Tax\ Expense}{Income\ before\ Tax}$$

The second proxy for company tax management is CETR, which shows that managers can lower cash taxes through efficient tax planning. Dyreng et al. (2017) claimed that since CETR is unaffected by changes in an organization's tax contingency, it offers a precise way to measure tax avoidance. The measurement of CETR includes tax avoidance practices that delay taxes, however, have no bearing on the corporate tax expenses that are shown on the financial statements. A firm that engages in more tax

evasion is indicated by lower CETR values from the firm's regular tax rate (Minnick & Noga, 2010).

$$Cash\ Effective\ Tax\ Rate\ (CETR) = \frac{Cash\ Tax\ Expense}{Income\ before\ Tax}$$

Financial Distress

The current study utilizes Z-score model developed by Altman (2013) to measure the financial hardship. The findings of Grice and Dugan (2001) indicated that financial distress metrics and the distress measures of Garman and Ohlson (1980) and Zmijewski (1984) are sensitive to time. They also discovered that the accuracy of each model's predictions decreases. The results also imply that other models are insensitive to periods of business financial crisis.

$$Financial\ Distress\ (FD) = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 (1)$$

whereas, the coefficients X are numbered for: 1 = Working Capital / Total Assets; 2 = Retained Earnings / Total Assets; 3 = Earnings Before Interest and Tax / Total Assets; 4 = Equity Book Value / Total Debt; 5 = Net Sales / Total Assets.

Corporate Governance

The direct structure, regulations, protocols, and procedures that control how businesses are run and structured are exemplified by corporate governance. Leadership, authority, direction, responsibility, and mechanisms used in the management of organizations are all part of corporate governance. An index is developed for every company to measure board structure. Binary integers 1 and 0 are used to create dummy variables for every variable in the board structure index. Therefore, the board size is assigned to 1 if it is equal to or greater than the sample median value, and 0 otherwise. Assign 1 if there is at least one independent director on the board; if not, assign 0. Likewise, if the CEO of the company is also the board chairman, they assign a value of 1; if not, they assign a value of 0. Assign 1 if there is at least one female director on the board; otherwise, assign 0. The scores for the four items, that is, board size, independent directors, CEO duality, and gender diversity were added to create the board structure index (Mathew et al., 2018). A company with a lower board structure index score has poor governance and vice versa.

$$Board\ Structure\ Index\ (BSI) = BS + ID + CD + GD \ldots\ldots\ldots\ldots\ldots (2)$$

where BS=Board Size; ID=Independent Directors; CD=CEO duality; GD=Gender Diversity

Control Variables

To mitigate other effects on tax management, this study also included a few control factors based on the review of existing literature by Wang et al. (2020), one of these factors is firm size (FS). Previous researchers found that larger firms are probably more tax-avoidant as compared to smaller organizations. Larger firms have high political and economic powers and due to this reason, they may decrease their tax burden.

$$Firm\ Size\ (FZ) = \ln\ (total\ assets)$$

Another control of the study is the leverage (LEV) of a firm. Interest deductions should be positively impacted by the incentives of tax avoidance. The positive association between LEV and tax management due to tax-deductible interest outflows.

$$Leverage\ (Lev) = \frac{Total\ Liabilities}{Total\ Assets}$$

Similarly, the market-to-book value (MBR) is also an established indicator in earlier literature. MBR is used as a proxy of growth opportunity and hence, is associated with increased income and taxation of a firm.

$$Market\ to\ Book\ Value\ (MBR) = \frac{Equity\ Market\ Value}{Equity\ Book\ Value}$$

Lastly, ROA is the proxy of the firm's profits. The large profitable institutions have strong motivation due to the massive potential of tax.

$$Return\ on\ Assets\ (ROA) = \frac{Net\ Income}{Total\ Assets}$$

Inferential Model

Considering the panel nature of the dataset, it is necessary to overcome the inherent limitations of panel data, such as heteroskedasticity, multicollinearity, and nonlinearity. Therefore, to analyse how corporate governance and financial distress affect tax avoidance. the Generalized Method of Moments (GMM) is applied for further inferential analysis considering the detected heteroskedasticity. Its remarkable efficacy, in

handling endogeneity and heteroskedasticity, makes it a suitable choice for the current investigation. Furthermore, this model is widely used in financial literature and also utilized by recent literature across corporate sector in Pakistan (Khan et al., 2022; Khan et al., 2023; Rasheed, Rasheed, Farooq, 2024). The general form of the panel data model is as follows:

$$Y_{it} = \alpha_{IT} + \beta_1 X_{it} + \cdots \beta_n X_{it} + \varepsilon_{it} \tag{3}$$

Here, *Yit* represents the outcome variable in the regression model, i denotes cross-sectional, *t* represents time series, and α is the constant term. β represents coefficients. *X denotes* the independent variables in the estimated model and = standard error of estimates.

The panel regression model is used to determine the effect of financial distress on tax management and the estimated equation is as follows:

$$TA_{it} = \alpha_0 + \beta_1 FD_{it} + \beta_2 FS_{it} + \beta_3 LEV_{it} + \beta_4 MBR_{it} + \beta_5 ROA_{it} + \varepsilon_{it} \tag{4}$$

$$TA_{it} = \alpha_0 + \beta_1 BSI_{it} + \beta_2 FS_{it} + \beta_3 LEV_{it} + \beta_4 MBR_{it} + \beta_5 ROA_{it} + \varepsilon_{it} \tag{5}$$

$$FS_{it} = \alpha_0 + \beta_1 BSI_{it} + \beta_2 LEV_{it} + \beta_3 MBR_{it} + \beta_4 ROA_{it} + \varepsilon_{it} \tag{6}$$

The panel regression model was used to determine the impact of financial distress and corporate governance on tax avoidance and the estimated equation is as follows:

$$TA_{it} = \alpha_0 + \beta_1 FD_{it} + \beta_2 BSI_{it} + \beta_3 FS_{it} + \beta_4 LEV_{it} + \beta_5 MBR_{it} + \beta_7 ROA_{it} + \varepsilon_{it} \tag{7}$$

where,

TA= Tax avoidance, FD= Financial Distress, BSI= Board Structure Index, FS= Firm Size, Lev= Leverage, MBR= Market to Book Ratio, and ROA= Return on Assets.

Results and Discussion

Descriptive Statistics

Descriptive statistics encompass the mean, minimum, maximum, and standard deviation. These values indicate the distribution of data. Standard deviation indicates the deviation from the mean, whereas the mean indicates the central tendency of data.

Table 1
Descriptive Statistics

Variable	Mean	Minimum	Maximum	Standard Deviation
ETR	0.264	0.076	0.570	0.147
CETR	0.288	0.068	0.558	0.131
FD	2.375	0.081	5.408	1.561
BSI	1.497	0.000	4.000	1.126
MBR	1.396	1.019	1.769	0.226
ROA	0.126	0.060	0.317	0.073
FS	6.951	5.747	8.323	0.706
LEV	0.397	0.040	1.769	0.224

Table 1 presents the descriptive statistics for the outcome variables ETR and CETR, predictor variables (FD and BSI), and control variables (MBR, ROA, FS, and LEV). The mean values of the outcome variables ETR and CETR are 0.264 and 0.288, respectively. The Pakistani firms are engaging in more tax avoidance practices, as the mean values of ETR and CETR are less than the regular tax rate. The mean values of the independent variables FD and BS index are 2.375 and 0.378, respectively. The mean values of the control variables MBR, ROA, FS, and LEV are 1.396,0.126, 6.951, and 0.397, respectively.

Table 2
Correlation Matrix of Variables

Variables	ETR	CETR	FD	BSI	LEV	MBR	ROA	FS
ETR	1.000							
CETR	0.104	1.000						
FD	0.094	0.070	1.000					
BSI	-0.045	-0.040	-0.108	1.000				
LEV	0.135	0.029	-0.014	0.076	1.000			
MBR	0.137	0.027	-0.008	0.075	0.599	1.000		
ROA	0.004	-0.039	0.591	-0.088	-0.005	0.003	1.000	
FS	-0.108	-0.113	-0.205	-0.167	-0.256	-0.261	-0.028	1.000

The dependent variables (ETR and CETR) and the other predictor variables (FD, BSI, ROA, LEV, MBR, and FS) are correlated in Table 2. A positive correlation is observed between tax avoidance and financial distress (ETR 0.094 and CETR 0.070), suggesting that firms engage in increased tax avoidance during periods of financial distress. In terms of tax avoidance, the board structure has a substantially negative relationship with

-0.045 and -0.040, respectively. The control variables LEV, MBR, and ROA have a positive correlation with tax management, while FS has an inverse correlation. These results are suggestive of a multifaceted interaction between the selected variables at the organizational level in Pakistan.

Results and Discussion

The inherent limitations of panel data including heteroskedasticity, multicollinearity, and nonlinearity must be addressed to analyze the impact of financial distress and corporate governance on tax avoidance. Simple pooled regression models are inappropriate for this form of analysis due to these issues. Consequently, to ascertain the appropriateness of various models, a rigorous methodology that included a variety of pretesting instruments, was implemented. To guarantee that the appropriate model was chosen, a variety of pretesting techniques were implemented: Durbin Watson is applied to residuals in order to examine the absence of autocorrelation using statistics. Variance inflation factor (VIF) values are assessed for multicollinearity among independent variables. The heteroskedasticity of the data was evaluated using the Breusch-Pagan Test. The serial autocorrelation test was conducted using e-views to determine whether the residuals from one period are correlated with those from another. Finally, the Hausman Test is employed to ascertain whether a fixed or random effect model should be employed, based on the correlation between the regressors and the individual-specific effects.

The Panel Cross-section and Period Heteroskedasticity LR Tests were employed to apply the panel regression model following the completion of these tests. Results suggested that there was substantial heteroskedasticity among the organizations in the sample and over time. This implied that the analysis was not suitable for basic regression models, since they violated assumptions, such as constant variance. GMM is considered to be the most appropriate method for additional inferential analysis considering the heteroskedasticity that was identified. The current study employs GMM due to its exceptional effectiveness to address heteroskedasticity and endogeneity. Even in the presence of these challenges, this model enables consistent and efficient estimation. Findings from the pretests, particularly to address issues, such as heteroskedasticity, which were prevalent in the data, support the use of GMM for this analysis. The regression analysis results are summarized in Table 3. This provides a comprehensive

understanding of the connections between tax avoidance, financial distress, and corporate governance.

Table 3

Pretesting of Pooled Regression Model

	Cross-Section		Period	
	Value(*df*)	Probability	Value(*df*)	Probability
Likelihood ratio	6988.935(164)	0.000	2482.092(164)	0.000

Hypothesis Testing

The GMM-based findings of the hypothesis testing are reported in Table 4 below. The findings are divided into four different regression models based on the mediation process established by Baron and Kenny (1986). For all the GMM models, the study utilized lags of exogenous variables as an instrument to achieve an over specified model. Subsequently, J-statistics was applied with a null hypothesis that the model is valid with instruments applied and with p value to accept or reject the null hypothesis.

Firstly, the results regarding the impact of financial distress on tax management for the time period (2011-2023) are reported under step 1. The current study determined that financial distress positively effects tax management. Financial distress is found to significantly increase tax evasion. It was also determined that the remaining variables of this study do not significantly influence tax avoidance. These findings are robust and valid as indicated by the J-statistics and their probability to support the validity of the instruments utilized.

In the second phase, an analysis of board structure and tax avoidance is reported in step 2. The findings establish a significant negative association between BSI and ETR at 5%. Similarly, here findings indicate that in the context of non-financial firms in Pakistan, the selected control variables do not play any significant role. The negative coefficient and insignificant impact of the SZ, LEV, ROA, and MBR of the firm established that effective corporate governance practices lead to decreased tax avoidance regardless of other factors.

Lastly, before analyzing mediation, the study tested the influence of board structure on financial distress. Findings indicate the presence of a

significant negative influence of board structure on financial distress. This establishes the hypothesis that weak governance mechanism leads towards financial distress in a company. Size (SZ) has a positive, however, an insignificant relationship with tax avoidance. This indicates that large firms are prone to more tax avoidance to enjoy their political and economic power and ability in order to reduce their tax burden accordingly as compared to small firms. However, the difference is not significant. The coefficient of MBR is positive for ETR and is significant at 10% for ETR. The regression coefficient of LEV has a negative association with ETR and is statistically significant at 1%. Lastly, ROA is found to be significantly and positively associated with ETR

Table 4
Hypothesis Testing

Variables	Coefficient	Standard Error	*t*-statistics	Probability
		Step 1-Independent Dependent Interaction		
ETR (-1)	-000.067	000.028	-2.402	0.017
FD	007.571	003.117	2.429	0.015
FS	020.172	014.890	1.355	0.176
LEV	-071.372	117.528	-0.607	0.544
MBR	331.594	437.481	0.758	0.449
ROA	-001.249	010.068	-0.124	0.901
	J-statistic	11.935	Prob(J-statistic)	0.684
		Step 2-Mediator Dependent Interaction		
ETR (-1)	-00.078	000.035	-2.236	0.026
BSI	-31.790	014.685	-2.165	0.031
FS	19.058	024.262	0.785	0.433
LEV	-10.841	095.911	-0.113	0.910
MBR	81.199	345.834	0.235	0.814
ROA	02.725	011.283	0.242	0.809
	J-statistic	10.164	Prob(J-statistic)	0.750
		Step 3-Independent Mediator Interaction		
FD (-1)	00.204	00.113	01.809	0.071
BSI	-00.511	00.019	-25.813	0.000
FS	00.038	00.285	00.135	0.893
MBR	50.740	18.755	02.705	0.007
LEV	-16.002	05.639	-02.838	0.005
ROA	01.030	00.373	02.758	0.006
	J-statistic	07.811	Prob(J-statistic)	0.899

Variables	Coefficient	Standard Error	*t*-statistics	Probability
Step 4-Mediation Analysis				
ETR (-1)	-000.062	000.026	-2.431	0.015
FD	007.621	003.109	2.452	0.015
BSI	-009.579	015.317	-0.625	0.532
FS	018.386	018.947	0.970	0.332
MBR	361.331	384.710	0.939	0.348
LEV	-076.641	104.125	-0.736	0.462
ROA	-000.902	011.150	-0.081	0.936
	J-statistic	09.403	Prob(J-statistic)	0.804

The concluding phase involves testing the mediation analysis. The preliminary investigation facilitated the concluding phase of the mediation process. Afterwards, the mediating role of financial distress between board structure and tax management was assessed. Step 4 presents the regression outcomes for the endogenous variable, mediating variable, and additional controls. In the context of the mediator, specifically financial decline, the direct relationship between corporate governance and tax avoidance should become insignificant. The negative association between the board structure index and tax avoidance becomes minimal when financial difficulty is present (Habib et al., 2020). Thus, comprehensive support for the mediation is confirmed. The regression coefficient for the board structure index is negative and statistically insignificant concerning ETR. Research suggests that organizations with effective governance are likely to exhibit superior performance and are less inclined to engage in tax evasion practices. The board is essential to the overall corporate governance. The attributes of board, such as its size, independence, and CEO duality, affect tax management procedures. The increased independence of the board mitigates tax aggression. The substantial board size deters tax evasion practices. Companies with extensive board sizes are less inclined to engage in tax avoidance strategies. These results align with the prior literature (Elloumi & Gueyié, 2001). The dual role of CEO as both chief executive and board chairperson significantly impacts tax avoidance behavior, concentrating decision-making authority on a single individual. When the CEO possesses the company's shares, their interests align with those of the firm, thereby discouraging engagement in high-risk activities. Tax avoidance is a precarious endeavor; hence, organizations with a CEO

holding dual roles are less inclined to participate in tax management (Badertscher et al., 2013).

Findings of the study reveal that during the times of financial distress faced by an organization in Pakistan, firms tend to raise tax management practices. The results are consistent with the review of existing literature provided by Habib et al. (2020). Furthermore, it can be inferred based on findings of the control variables that regardless of the size, LEV, ROA, and MBR of the firm, the business tends to operate similarly when it comes to financial distress and indulgence in tax avoidance. This provides unique and contextual insights. As far as the findings of corporate governance and tax avoidance are concerned, the findings are aligned with existing literature on the topic of reducing agency performance through corporate governance mechanism (Khan et al., 2022; Khan et al., 2023; Rasheed, Rasheed, & Farooq, 2024). Furthermore, the findings related to the use of financial LEV indicate that the increased use of debt leads towards decreased tax avoidance (Bayar et al., 2018; Richardson et al., 2015). This may be attributed to the tax shield provided to the organizations by the interest expense hence, their tendency for further reduction in taxes declines. Furthermore, an increased level of profits leads towards increased tax avoidance on the part of company's management which also concurs with the existing literature on the topic (Eskandari & Kordestani, 2024; Kovermann & Velte, 2019; Richardson et al., 2015). The current study also adds to the existing paradigm of knowledge through the incorporation of financial distress as a mediator between corporate governance and tax avoidance. This mediation analysis not only contributed to the existing understanding of dynamics, however, also uncovered the intricate interplay and flow between these constructs.

Overall, findings indicate that the enterprises in Pakistan participated in tax evasion activities during the financial downturn due to inadequate governance structures. The outcomes indicate that the initial link between board structure and tax management is modified by the influence of financial distress. These data indicate that Pakistani enterprises engage in increased tax avoidance during financial downturns, especially when a weak governance system is present. Regrettably, corporate governance measures in Pakistan are substandard for various reasons. Predominantly, Pakistani enterprises are either owned by families or institutions. They possess a significant number of outstanding shares which grants them

enhanced voting power to elect directors at annual meetings. The directors constitute firm's senior management and decision-makers; they prioritize their interests while disregarding those of other stakeholders'. CEO remuneration also results in tax evasion practices. All regression models for hypothesis testing are determined to be statistically valid, with the instruments assessed by J-statistics and their associated probability values.

Robustness Measures

Lastly, to affirm the reliability and validity of the model and findings, GMM model against orthogonal deviations and with the second proxy of tax avoidance, that is, CETR is performed. It is performed as a robustness measure along with a serial correlation of error terms at first and second differences. Hence, this provided a comprehensive coverage to establish the credibility of the findings in the context of non-financial sector in Pakistan.

Table 5
Robustness Tests

Variables	Coefficient	Standard Error	*t*-statistics	Probability
		Orthogonal Deviations		
ETR (-1)	000.008	000.011	0.777	0.437
FD	006.904	001.416	4.877	0.000
BSI	-002.916	002.466	-1.182	0.238
FSS	-002.215	003.077	-0.720	0.472
MBR	-645.581	183.932	-3.510	0.001
LEV	180.226	054.265	3.321	0.001
ROA	015.729	007.630	2.061	0.040
	J-statistic	12.25494	Prob(J-statistic)	0.585
		CETR		
CETR (-1)	-000.498	000.026	-19.200	0.000
FD	000.485	000.014	35.281	0.000
BSI	033.151	028.613	01.159	0.247
FS	039.410	030.564	01.289	0.198
LEV	-237.923	282.442	-00.842	0.400
MBR	601.664	923.808	00.651	0.515
ROA	002.698	023.361	00.116	0.908
	J-statistic	02.385	Prob(J-statistic)	0.999
		Arellano-Bond Serial Correlation Test		
Test order	m-Statistic	rho	SE (rho)	Probability
AR (1)	-1.661	-45931.093	27651.347	0.097
AR (2)	-1.280	-05374.575	04200.121	0.201

The analysis of robustness measures through orthogonal deviations and utilization of another proxy, that is, CETR affirms the earlier findings that financial distress mediates between governance tools and tax avoidance at organizational level in Pakistan. The validity of instruments is also affirmed through the J-statistics and its probability affirming the null hypothesis.

Lastly, the results for the Arellano-Bond Serial Correlation test indicate that the error terms of the model are unrelated for both first and second-order correlation and are statistically insignificant for the model of the study. Hence, this further establishes the robustness of inferential model.

Conclusion

In a financially constrained and faltering nation, such as Pakistan, every cent of federal revenue is essential to avert imminent fiscal default. This study examined the corporate tax avoidance across listed manufacturing firms in Pakistan. In addition to its significant relevance, the study is distinctive as it investigated the mediating effect of financial distress in the relationship between governance mechanisms inhibiting tax evasion. Additionally, the study utilized a 13-year timeframe, for the years (2011-2023), employing a GMM regression analysis panel. Findings indicated a significant direct association between financial downturn and tax evasion. Findings affirmed that during the periods of financial extremes, corporations are more inclined to engage in tax evasion practices. These findings are especially concerning for an economy, such as Pakistan, which is persistently grappling with economic survival in the post-pandemic period. The organizations in Pakistan are perpetually in a state of financial difficulty due to significant currency devaluation and rising costs. This exacerbates the already struggling governmental funding streams. The research revealed that good business governance adversely affects tax avoidance and financial distress. Consequently, a good corporate governance framework not only mitigates tax avoidance, however, also diminishes the likelihood of financial crisis at the organizational level. These findings are critically important for all stakeholders including shareholders and the government. An effective corporate governance framework not only safeguards shareholders' interests, however, also enhances state revenue by reducing tax dodging. Additionally, the study indicated a complete endorsement for the mediation of financial distress while considering governance mechanism, reducing tax evasion. This enhances the existing comprehension of relationship between these factors

and establishes that inadequate corporate governance mechanisms are a substantial root cause of financial distress in Pakistani organizations. These ineffective processes not only resulted in financial hardships, however, also incentivized management to evade tax liabilities. These data indicate that Pakistani enterprises engage in increased tax dodging during the periods of financial difficulty when governance structures are inadequate. The other control variables representing growth, profit, capital, and liabilities were found to exert a mixed, however, predominantly insignificant influence on tax avoidance. This negligible behavior may be ascribed to the study's sampling, as it exclusively examined the listed companies, rendering the sample insufficiently representative to discern variations among these variables. Another reason may be that organizations under financial hardships exhibit comparable behaviors irrespective of other considerations.

The study offers distinct tax evasion implications during the periods of financial difficulty, which would be beneficial for investors, politicians, and tax regulators. Taxation stakeholders should exercise greater caution to identify corporations that are involved in tax avoidance practices during the periods of financial crisis, particularly during economic recessions. Strict and consistent corporate oversight and audit procedures may ensure the protection of stakeholders' interests including the government. Furthermore, understanding the relationship between tax avoidance and recent financial downturn encountered by enterprises necessitates those investors evaluate premium cash flow and the risk associated with capital expenses.

The current research possesses multiple limitations. Each nation possesses unique tax regulations and procedures, leading towards variations in tax avoidance behavior. This study incorporates changeable CEO duality, as mandated by a recent update to the Pakistan corporate governance legislation of 2017. This requires the separation of the chairman of the board and stipulates the inclusion of a female and an independent director. Subsequent research may need to incorporate these aspects into their study. Consequently, due to the lack of data availability, just 167 firms are included in the sample. Prior research indicates that corporate social responsibility substantially influences corporate tax avoidance. Consequently, it is advised that future studies incorporate corporate social

responsibility and additional variables to elucidate the mechanisms by which they affect tax avoidance in Pakistan.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

Funding Details

This research did not receive grant from any funding source or agency.

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