

THE IMPACT OF CORPORATE AND SHARI'AH GOVERNANCE ON THE RISK PROFILE OF ISLAMIC FINANCIAL INSTITUTIONS

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ABSTRACT

This study analyzes the effects of corporate and *Shari'ah* governance on risk-taking practices in Islamic financial institutions in Pakistan. It also investigates the role of institutional quality in moderating these effects. A sample of 28 institutions over the period 2011–2022, including Islamic commercial banks, *Takaful* operators and *Modarba* companies, was utilized for the analysis. Applying the generalized method of moments (GMM) estimator, the results suggest that several individual characteristics of corporate governance and its index are significantly related to *Shari'ah* non-compliance and solvency risk. The findings also reveal that institutional quality significantly contributes to the lowering of risk. It is recommended that modern corporate and *Shari'ah* governance practices be adopted to manage both *Shari'ah* non-compliance and solvency risk.

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I. INTRODUCTION

The financial sector, which serves as an intermediary, is regarded as the foundation of the economy (Trinh et al., 2015; State Bank of Pakistan, 2013). Banks in particular play a significant role in economic growth by directing savers' funds towards businesses (Jarrett et al., 2019). Due to its distinct operational model and significance in the economic system, the financial sector requires internal regulations for supervision and control. For smooth operations of the sector and the economy overall, effective corporate governance (CG) is crucial (BIS, 2015), which refers to the system governing the relationships between the management, board, stakeholders, and other stakeholders (OECD, 1999). The success of financial organizations is thought to be highly dependent on CG.

However, concerns over the Islamic principles of CG are emerging in contemporary scenarios. Ensuring the rights and duties of concerned parties and providing justice and fairness in economic activities are key principles and objectives of Islam. Shah & Rashid (2015) outline good governance from the perspectives of the *Shari'ah*, which includes justice (*adl*), transparency (*wuduh*), accountability (*Hisbah*), risk management, consultation (*Shura*), and record keeping (*Kitabah*). Islamic Finance Institutions (IFIs) require additional arrangements in order for good CG to conform to *Shari'ah* principles (Muneeza & Hassan, 2014; Shah et al., 2020). Therefore, international standard setting bodies (for instance, IFSB and AAOIFI) and the State Bank of Pakistan (SBP) have issued governance standards to ensure that the activities of IFIs comply with the *Shari'ah*. In the case of Pakistan, the *Shari'ah* Governance Framework (SGF) for Islamic Banking Institutions (IBIs) is implemented, with an improved version introduced on 1st July, 2021. The primary objective of the SGF is to support the overall *Shari'ah* compliance of Islamic banks and to outline the duties of various organs of Islamic banks, including the Board of Directors (BOD), Executive Management (EM), *Shari'ah* Board (SB), *Shari'ah* Compliance Department (SCD), Product Development (PD), internal auditors and external auditors towards *Shari'ah* compliance.

The Basel committee (BC) of the Bank for International Settlements (BIS) states that good CG practices are very important to achieve the confidence of stakeholders, specifically in the banking sector. Indeed, they are very important for the growth and sustainability of the financial sector, and in turn for the growth of the whole economy (BIS, 2010). Excessive risk taking and weak CG practices may lead towards instability, inefficiency and significant losses. Therefore, effective and strong CG is very important for financial sector profitability and stabilization (Zhang et al., 2016). The importance of governance is central for Islamic financial institutions (Akmal et al., 2020). It is also evident that different CG characteristics such as board features, ownership structure and CEO pay and other remunerations played a prime role during the financial crisis of 2007-08 (Beltratti & Stulz, 2012; Erkens et al., 2012; Edmans et al., 2023).

IFIs are fundamentally very different from their conventional counterparts. The fundamental rule for the institutions is adherence to the *Shari'ah*, with divergence raising the probability of *Shari'ah* non-compliance. IFIs are prohibited from engaging in interest-based businesses, excessive risk activities, and financial derivatives (Shah & Irfan, 2022; Rashid et al., 2020). They are required to abide by the *Al-kharaj bil daman* rule, which states that the right to profit only comes with

the obligation to accept loss. Furthermore, IFIs have a clearly defined risk-sharing mechanism, especially in partnership forms such as *Modarab'ah* and *Musharak'ah* (Shah & Rashid, 2018; Ramdani & Kamal, 2023). *Shari'ah* Governance Frameworks (SGFs) require that IFI activities are in accordance with Islamic laws. Any departure by IFIs from SGFs discovered during audit may lead to *Shari'ah* non-compliance risk and solvency risk. SGFs are therefore included in the CG of IFIs to manage the risk of *Shari'ah* non-compliance.

In a similar vein, several researchers have empirically examined the role of CG in effective risk management (Trinh et al., 2015; Tarchouna et al., 2017; Mollah et al., 2017; Permatasari, 2020; Tawfik & Elmaasrawy, 2024). However, in the context of Pakistan, the risk management (solvency and *Shari'ah* non-compliance risks) of IFIs from the perspective of CG has been underexplored (including *Shari'ah* governance). We also are unaware of any in-depth, comprehensive investigation of the moderating role of institutional quality in the relation between CG and IFI risk in Pakistan. Therefore, this study analyzes the effects of corporate and *Shari'ah* governance on risk-taking practices in Pakistani Islamic financial institutions. In addition, it investigates the moderating role of institutional quality (IQ) in determining these effects. A sample of 28 institutions including Islamic commercial banks, *Takaful* operators and *Modarab'ah* companies over the period 2011-2022 was utilized for the analysis. Employing dynamic panel modeling and the generalized method of moments (GMM) estimator, we found that several individual characteristics of corporate governance and its index were significantly related to *Shari'ah* non-compliance and solvency risk. However, the results also reveal that institutional quality significantly contributes to reducing the level of risks. We contribute to the literature in several aspects. First, we examine the role of corporate and *Shari'ah* governance in the risk-taking of IFIs by considering the case of Pakistan. Second, a contribution is made to understanding of risk-taking behaviors in IFIs, with emphasis on the critical roles institutional quality plays in formulating the governance dynamics, including the *Shari'ah* governance structure that influences risk-taking behaviors in financial institutions. Finally, our study adds to the literature on governance by highlighting that a suitable board structure is essential for successful risk management.

The remainder of the paper is structured as follows. Section 2 presents the background and relevant literature, and develops testable hypotheses. Section 3 describes the data, sample, model specification and estimation methods, while the empirical findings are presented and discussed in Section 4. Finally, Section 5 summarizes the key findings and provides policy implications.

II. BACKGROUND, LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Background

Islamization of the economy is not new in Pakistan, having started in the 1970s during the Zia regime. Recently, the Federal Shariat Court of Pakistan, in its judgment on *Ribā*, declared interest-based banking system as *haram*, or unlawful (Mansoori & Ayub, 2022). This judgment contributed toward the move to Islamizing the economy, aimed at the establishment of a fair and equitable economic system.

The Islamic financial system constitutes a vital component of the broader economy; therefore, there is a pressing need for its comprehensive Islamization to ensure alignment with *Shari'ah* principles. Although the growth of Islamic banking in the country is commendable, its share of overall business remains low, with asset and liability shares of 19.4% and 23.2% respectively (IBB-SBP, 2023). Therefore, effective governance of the sector is vital, with overall *Shari'ah* governance imperative. Initially, in 2008, SBP directed each institution offering Islamic financial services to appoint at least one *Shari'ah* advisor. Subsequently, in 2015 SBP made the appointment of at least three *Shari'ah* scholars in each institution mandatory (SGF-SBP, 2015). Therefore, the *Shari'ah* Board is vital for the governance and growth of the Islamic banking in Pakistan. *Shari'ah* governance is one major factor that differentiates Islamic financial institutions from their conventional counterparts.

2.2. Corporate Governance for Islamic Financial Institutions

Owing to a number of factors, the importance of CG in Islamic banking needs more focus. First, *Shari'ah* compliance is very important for Islamic banks, besides the observance of banking regulations (Archer et al., 1998). According to Chapra & Ahmed (2002) most Islamic investors and depositors want their money to be invested in accordance with *Shari'ah* principles. Hence, Islamic banks are more vulnerable to *Shari'ah* non-compliance risk. Depositors in such banks may withdraw their funds if their adherence to the *Shari'ah* is low. Safieddine (2009) explains that “agency problems in conventional companies arise when managers deviate from their duty to maximize shareholders’ wealth; any divergence by managers of IFIs from placing all supplied funds in *Shari'ah*-compliant investments creates an additional source of agency problems.”

In Islamic banks, there are unrestricted investment account holders (IAHs). Usually, the proportion of depositors’ funds is greater than that of shareholders’ equity, but they have no right to express their views in shareholder meetings. While allowing IAHs to participate in annual general meetings is a debatable issue (Darmadi, 2013), all related measures to protect the interest of deposit holders must be taken. These may include proper supervision, sufficient regulation, good CG and sound risk management (Darmadi, 2013; Shah et al., 2021). If this is not the case, then depositors have the right to withdraw their funds, which is against the interest of other stakeholders.

Another important factor is that most Islamic banks operate in emerging economies, where the institutional environment is generally weak (Akmal et al., 2022). In such economies, family control and high levels of ownership concentration are normal. Meanwhile, minority shareholders and IAHs are less protected by regulations. Moreover, disclosure practices and transparency are weaker in emerging economies than in developed ones, which results in high monitoring costs and information asymmetry. Market discipline is an additional issue in such markets (Shah & Rashid, 2019). The aforementioned reasons stress the significance of CG in financial institutions, particularly Islamic banks.

2.3. The *Shari'ah* Supervisory Board (SSB) and Risk Taking

IFI operations are distinguishable from their counterparts, at least technically, from the aspect of being more socially responsible (Mollah & Zaman, 2015). The key difference in the governance of Islamic and conventional financial institutions is the *Shari'ah* Supervisory Board or *Shari'ah* supervision, which plays an additional role in the governance of the institutions. The *Shari'ah* board also plays a role as an independent control mechanism to prevent excessive risk-taking by boards of directors (Hassan & Mollah, 2014). The SSB encourages management to be more transparent. To strengthen its role, the AAOIFI has developed governance standards related to the structure and roles of the *Shari'ah* board. Each board should have at least three members, and each should produce an annual report that is included in the institution's financial statements (AAOIFI, 2015).

Religiosity and ethical beliefs compel the board of directors to avoid poor quality financing and excessive risk taking, whilst achieving social justice. The governance structure of IFIs, with the additional mechanism of *Shari'ah* supervision, means they should not face the difficulties experienced by conventional financial institutions (Mollah & Zaman, 2015). The role of SSB will make the operations of IFIs more transparent and less risky, which in turn will improve their performance.

Some researchers have stated that the *Shari'ah* Board is the same as the BOD and audit committee (Rahman & Bukair, 2013), with their structures being similar (Bhatti & Bhatti, 2010). Therefore, CG theories, for example those related to stewardship, agency and resource dependence, could be employed to describe the impact of SSB on IFI performance (Aslam & Haron, 2020; Nomran et al., 2018; Nomran et al., 2017). Alman (2012) and Quttainah et al. (2013) referred to the theories to explain the effectiveness of SSB. The BOD and management can have a greater influence on smaller SSBs than larger ones (Nomran et al., 2018). Larger SSBs have scholars with different backgrounds, skills and experience, so can contribute towards the better performance of the institutions (Hamza, 2016; Tawfik & Elmaasrawy, 2024).

Stakeholder theory emphasizes that the interest of all stakeholders should be honored in addition to protection of the interest of shareholders. However, the focus of resource dependency theory is that directors play an important role in the provision of resources to institutions through their external linkages. As a result, these theories can be used to explain the link between SSBs and institutional performance (Musibah & Alfattani, 2014).

Previous studies on Islamic banks have generally focused on profitability, stability and efficiency issues in comparison to conventional banks. However, empirical research on the governance of Islamic financial institutions, including the Islamic Banking sector, is limited (Zaman & Mollah, 2015).

Shari'ah supervision is generally viewed to be imperative. Lewis (2005) found that the SSB plays an important role in the governance of Islamic banks. Virk et al. (2022) and Aslam & Haron (2020) also concluded that it positively influences the performance of Islamic banks. However, previous studies have obtained mixed results regarding the link between *Shari'ah* board size and performance. Nomran et al. (2018) established a positive relationship between SSB and performance in line with stewardship and resource dependency theories. On the other hand, Rahman & Haron (2019) found a negative relationship, in line with agency theory. The

SSB offers very important directions to management and the board of directors. Further, they ensure the provision of *Shari'ah*-compliant products to customers, which could have a positive impact on performance. It has also been argued that an increase in the size of the SSB would enhance its supervisory and oversight function and also improve performance (Almutairi & Quttainah, 2017).

Financial intermediaries are very important in relation to risk acceptance and the transfer of financial resources in the economy. Bankruptcy can be defined as the "legal status of an insolvent person or an organization; that is, someone who cannot repay the debts owed to creditors". Bankruptcy is usually enforced by a court order, which is often triggered by debtors. When an organization's debt exceeds the value of its existing assets, it declares bankruptcy (Gittman & Plumer, 1996). An institution's inability to repay its financial liabilities in an appropriate time period reflects financial distress, which can lead to bankruptcy.

When a bank fails to follow the rules and regulations of the *Shari'ah* Board and regulators, *Shari'ah* non-compliance risk (SNCR) is triggered. IFSB defines SNCR as "risk arising from Islamic banks' failure to comply with the *Shari'ah* rules and principles determined by *Shari'ah* board or the relevant body in the jurisdiction in which the Islamic bank operates" (IFSB, 2005). A study of fifty-one Islamic banks from different countries to identify determinants of *Shari'ah* non-compliance risk (SNCR) concluded that additional capital charge was not a solution for it. Rather, supervisory controls were more effective in dealing with such risk (Oz et al., 2016).

The SSB works with board of directors as an independent entity for the certification of products and services in accordance with Islamic law (AlAbbad et al., 2019). Therefore, it adds an extra layer in the overseeing of an institution's operations. The SSB might also discourage BOD and higher management from taking excessive risks (Mollah & Zaman, 2015), which adds value in ensuring the solvency of the institution. Related research shows a negative association between religiosity and risk taking by individuals (Mollah et al., 2021). Miller & Hoffmann (1995) conclude that a religious individual is risk averse, whereas a non-religious individual is more likely to take risks. Some empirical studies have found that being religious and participating in religious activities more frequently have a positive relationship with risk aversion (Miller, 2000). Other researchers have shown that organizations located in countries with high religiosity are less prone to taking risks (Hilary & Hui, 2009).

Decisions of the SSB involve the understanding of legal issues, Islamic Law, and modern economic, financial and banking systems. Therefore, more members on the board will bring increased and diverse expertise, which will add value to the financial decisions of institutions, and lead to higher conformity with Islamic law, which consequently may affect the risk taking of Islamic financial institutions. Larger SSBs may also increase the capacity of boards to improve the quality of ex-ante *Shari'ah* screening of financing and strategies. They may also reduce the moral hazard problem of managers in extending financing to customers (Safiullah & Shamsuddin, 2018). A stronger *Shari'ah* board could mitigate the aggressive financing of managers, in turn reducing IFI risk. Bourakba & Zerargui (2015) conclude that there is a negative relationship between credit risk and *Shari'ah* board size.

The relationship between the SSB and the financial performance of Islamic financial sector is well established in the literature (Akmal et al., 2022). Research also shows a negative, significant association between religiosity and risk taking by individuals (Mollah et al., 2021). Likewise, organizations located in the countries with high levels of religiosity appear to be less likely to be risk takers (Hilary & Hui, 2009). Some previous studies document a negative relationship between *Shari'ah* board size and risk (AlAbbad et al., 2019; Safiullah & Shamsuddin, 2018; Fakhrunnas & Ramly, 2016). On the basis of the discussion above, the following hypothesis is proposed:

H_1 : *There is a significant negative relationship between SSB size and IFI risk taking.*

2.4. Corporate Governance and Risk Taking

Van Greuning & Brajovic Bratanovic (2003) suggest that financial market volatility, together with liberalization and intense competition between financial institutions increase their risk exposure and hence necessitate robust risk management. While banking and financial institutions are highly regulated as compared to others, regulatory authorities may not be in a position to prevent them from failure. Therefore, the main responsibility lies with the board of directors and management. As Derwall & Verwijmeren (2007) conclude, better governance is related to lower insolvency risk.

Findings on the relationship between CG and insolvency risk are generally mixed. Anginer et al. (2018) found a positive relationship between shareholder-friendly CG and such risk, while Switzer et al. (2018) conclude that large and independent boards had a high propensity to insolvency risk. On the contrary, Switzer & Wang (2013) find an inverse relationship between large and independent boards and insolvency risk amongst U.S. commercial banks. Likewise, Ashbaugh-Skaife et al. (2006) suggest that CG has an impact on an institutions' bond ratings due to the probability of default risk arising from agency conflicts. Inefficient governance may create agency conflict, in which case profit might be channeled to pay higher dividends. However, the tendency to invest in more risky projects may increase, which might result in default/insolvency risk. Another study suggests that good CG will encourage excessive risk taking (Iqbal et al., 2015), which in turn leads toward insolvency risk (Ali et al., 2021). Trinh et al. (2015) also conclude that CG has a significant relationship with risk management. Consequently, the following hypothesis is posited:

H_2 : *CG has a significant relationship with IFI risk taking.*

2.5. Institutional Quality and Risk

Institutional quality plays a very important role in CG practices in both developed and developing countries (Arslan & Alqatan, 2020; Arslan et al., 2019). Notably, the national institutional environment not only affects institutions directly, but also indirectly by moderating the role of CG (Young et al., 2008). Given these arguments, it can be stated that a good quality institutional environment is a prerequisite for an effective CG setup. Indeed, some previous studies have focused on the role of institutional quality in the soundness of the banking sector.

For example, Rashid & Intartaglia (2017) indicate that financial development plays a more substantial role in reducing poverty when institutions are sound. Similarly, Nosheen & Rashid (2019) conclude that institutional quality plays a vital role in the stability of banks. However, in the context of Pakistan, there remains a gap in the literature regarding examination of the role of institutional quality in the performance, risk management and information symmetry of the financial sector. Therefore, this study adds to the body of knowledge on the role of institutional quality by investigating how the institutional environment moderates the effect of CG structure on the financial services sector. Furthermore, the study contributes by examining whether the moderating role of institutional quality in determining the effectiveness of CG is similar for both IFIs and CFIs. In this light, we propose that:

H_3 : Institutional quality plays an important role in shaping the effect of CG on IFI risk taking.

III. DATA AND MODEL SPECIFICATION

3.1. Data and Variables

The Islamic financial sector in Pakistan comprises Islamic banks, *Takāful* operators, *Mudārabah* companies and asset management companies. The share of the Islamic financial sector has been growing over recent years following the Federal Shariat Court's verdict on Riba in 2022 and the 26th amendment to the Constitution of Pakistan 1973. In Pakistan, 22 Islamic banking institutions are currently offering Islamic banking products and services, with a 19% share on the asset side (IBB-2025). There are also 32 *Takāful* operators/insurance companies offering *Takāful* products (SECP-2023), and 24 *Modarabas* with asset size of Rs. 56 billion currently in operation (SBP-2023). In this study, based on data availability, we employ a sample of three Islamic banks (full-fledged), five *Takāful* operators and 20 *Modarab'ah* companies. Data were collected from annual financial statements over the period 2011-2022, with specific data on macroeconomic indicators gathered from the Economic Data of the State Bank of Pakistan. In addition, the data for institutional quality indicators were taken from the World Bank's Worldwide Governance Indicators. The measurement of key variables is discussed below.

Shari'ah Non-Compliance Risk (SNCR): *Shari'ah* non-compliance risk is defined as the "failure of the IBs to comply with the *Shari'ah* rules and principles determined by the *Shari'ah* board or the relevant body in the jurisdiction in which the IB operates". In this paper, *Shari'ah* non-compliance income is used as a proxy for SNCR (Oz et al., 2016; Basiruddin & Ahmed, 2020; Ramdani & Kamal, 2023).

Corporate Governance: Researchers employ differing indicators/measures for CG. Based on the literature, we consider those CG variables that we deem most relevant and for which data are available, namely board size, board composition, CEO duality, CEO remuneration, ownership concentration, and independent non-executive directors (Aslam & Haron, 2020; Nawaz, 2019; Bhagat & Bolton, 2019; Sheikh & Kareem, 2015). The information on these indicators was collected from the *Shari'ah* Supervisory Board for IFIs.

Risk-taking Behavior: One of the popular measures of solvency in the financial sector is the Z-score (Rashid & Intartaglia, 2017; Jan & Marimuthu, 2015). This is

easy to understand and calculate as it only depends upon accounting information. Furthermore, it can be calculated even for unlisted financial institutions. The extensive use of this measure in previous research shows the confidence of researchers in its reliability as a measure of financial soundness. Researchers have also used the measure to compare the risk-taking attitude of Islamic and conventional banking sectors (Rashid & Intartaglia, 2017; Rahman et al., 2009). The Z-Score is computed as:

$$Z - Score = \left(\frac{EQ}{TA} + \mu_{ROA} \right) / \sigma_{ROA} \quad (1)$$

where $\frac{EQ}{TA}$ is the ratio of equity capital plus reserves to total assets; μ_{ROA} is the mean value of return on assets (ROA); and σ_{ROA} is the standard deviation of ROA. Under the assumption that an institution's ROA is normally distributed, the Z-score tells us the maximum number of standard deviations by which the realization of ROA has to decrease to use up the equity capital of the institution. Consequently, the higher the value of the Z-score, the lower the likelihood of the financial institution's insolvency.

Table 1.
Description of Variables

Dependent Variables			
Variable	Proxy	Description	Definition
Shari'ah Non-compliance Risk	SNCR	Risk which arises due to the failure of an Islamic financial institution to comply with <i>Shari'ah</i> rules.	SNCI/Net Income
Z-Score (Insolvency Risk/ Credit Risk)	Z-Score	The insolvency risk of financial institutions.	Z-Score: (Mean value of Return on Assets + Capital Ratio)/Return on the Assets' standard deviation
Control Variables /Institution-Specific Variables			
Advances to Total Assets	ADTA	The extent to which an institution efficiently uses its resources for investment; that is, the level of assets tied to advances.	The ratio of net advances to total assets of the institution.
Institution Size	INSZ	Size of the institution.	Log of the total assets of the institution; a proxy for size.
Capital Buffer	CAPB	Measure of capital available to cushion against adverse shocks.	Proportion of equity to total assets of the institution = EQ/TA
Gross Domestic Product	LGDP	National GDP.	Log of GDP.
Consumer Price Index	LCPI	Measure of the country's aggregate price level.	Log of the yearly data of the consumer price index.
Karachi Interbank Offer Rate	KIBOR	APricing benchmark used for financing.	Yearly value of the KIBOR.

Institutional Quality: The role of institutions is very important in identifying the restrictions imposed on them. National legal rules strengthen the rights of shareholders and make managers accountable; such accountability ensures CG functions properly (Himaj, 2014). In this study, we used Worldwide Governance Indicators (WGI) due to their relevance to the objectives and the availability of data. In Table 2, institutions are divided into three categories: legal, political and economic (Kuncic, 2013).

Table 2.
Institutional Proxies

Variables	Proxy	Description
Legal Institutions	Rule of Law (ROL)	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Political Institutions	Control of Corruption (COC)	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.
Economic Institutions	Regulatory Quality (RQ)	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

3.2. Models

To examine the impact of CG on SNCR and the Z-Score, the following models were specified:

$$SNCR_{i,t} = \beta_1 + \beta_2 SNCR_{i,t-1} + \beta_2 CGC_{i,t} + \lambda X_{i,t} + e_{i,t} \quad (2)$$

$$Z - Score_{i,t} = \beta_1 + \beta_2 Z - Score_{i,t-1} + \beta_2 CGC_{i,t} + \lambda X_{i,t} + e_{i,t} \quad (3)$$

where $SNCR_{i,t}$ is *Shari'ah* non-compliance risk; $CGC_{i,t}$ is the proxy of CG; $X_{i,t}$ is a set of institution-specific and macroeconomic variables as outlined in Table 1; $e_{i,t}$ is the composed error term.

Subsequently, to explore the moderating role of IQ, we respecified the above models as:

$$SNCR_{i,t} = \beta_1 + \beta_2 SNCR_{i,t-1} + \beta_2 CGC_{i,t} + \beta_3 (CGC_{i,t} \times IQ_t) + \beta_4 IQ_t + \lambda X_{i,t} + e_{i,t} \quad (4)$$

$$Z - Score_{i,t} = \beta_1 + \beta_2 Z - Score_{i,t-1} + \beta_2 CGC_{i,t} + \beta_3 (CGC_{i,t} \times IQ_t) + \beta_4 IQ_t + \lambda X_{i,t} + e_{i,t} \quad (5)$$

In (4) and (5), the indexes of CG and institutional quality were constructed using the PCA.

3.3. Estimation Technique

The empirical models presented above are dynamic in nature as they include a one-period lagged dependent variable as an explanatory variable. By construction, the endogeneity issue is inherent in the specification, as the lagged dependent variable is correlated with the error term. Our use of panel data in the study allowed for data analysis across different periods and entities, capturing cross section and time series variations (Ascarya & Indra, 2022). In the analysis, we applied the robust two-step system-Generalized Method of Moments (GMM) estimator proposed by Arellano & Bover (1995), later fully developed by Blundell & Bond (1998). We performed two diagnostic tests: first, Arellano & Bond's (1991) AR(1) and AR (2) tests for the first- and second-order serial correlations; and second the J-test to ascertain whether the instruments used in the estimation were orthogonal to the estimated residuals.

IV. EMPIRICAL RESULTS

Table 3 presents the estimation results of our models. In Model (1), we find that board size is significantly and positively related to SNCR. This positive relation might be due to ineffective communication between board members. Furthermore, BODs might not be very concerned with SNCR. There is also a possibility that in the case of aggressive financing and investments, *Shari'ah* compliance might be less emphasized. The study findings suggest that small boards are better at overseeing and monitoring SNCR. Basiruddin & Ahmed (2020) and Tawfik & Elmaasrawy (2024) obtained similar results. However, the relationship between board size and the Z-score is insignificant. Board composition is negatively and significantly associated with SNCR. Furthermore, it has a negative and significant relationship with the Z-score. These results support the preposition of agency theory, that independent directors are effective at mitigating SNCR, but less so with regard to risk-taking. This finding is also in line with the study of Basiruddin & Ahmed (2020). CEO duality is not significantly related to SNCR; however, it has a positive and significant relationship with the solvency of institutions. This reaffirms the findings of Parris & Guzmán (2023).

Table 3.
CG vs SNCR and Z-Score

Variable	SNCR	ZSCR	Variable	SNCR	ZSCR
	Model (1)			Model (2)	
BSIZ	0.071*** (0.0170)	-0.980 (0.600)	CGC	-0.0336 (0.227)	-0.170*** (0.0574)
BCOM	-0.0216*** (0.049)	-0.534* (0.311)	CGC_IQ	0.0217*** (0.0054)	-0.0679*** (0.0226)
CEOD	-0.108 (0.023)	0.479* (0.250)	IQ	-0.0516*** (0.00359)	-0.0154 (0.0608)
SBS	-0.126*** (0.028)	-0.193*** (0.0739)	INSZ	-0.120** (0.0556)	0.542*** (0.111)
CEOR	-0.0222 (0.0294)	0.00122 (0.00542)	CAPB	-0.0129*** (0.00465)	40.09*** (11.94)
OWNC	-0.0458* (0.0235)	-0.00157 (0.00373)	ADTA	0.0854* (0.0471)	-0.262 (0.352)
INSZ	0.120* (0.0795)	0.498*** (0.118)	LOG-GDP	0.0859*** (0.0122)	-0.273 (0.278)
CAPB	-0.00157 (0.0104)	35.16*** (12.15)	LOG-CPI	0.0974*** (0.0151)	-0.781 (0.977)
ADTA	-0.0773 (0.107)	-0.560 (0.382)	KIBOR	0.0737*** (0.0243)	-0.0123 (0.0272)
LOG-GDP	0.365 (0.077)	0.828* (0.429)	LAG-SNCR	0.742*** (0.0184)	
LOG-CPI	-0.0575 (0.385)	-0.184** (1.570)	LAG - ZSCR		0.379*** (0.0490)
KIBOR	-0.015 (0.001)	-0.074 (0.0244)	Constant	0.0113*** (0.00133)	1.175 (2.827)
LAG-SNCR	0.811*** (0.0316)				
LAG - ZSCR		0.371*** (0.0551)			
Constant	-0.00389* (0.00256)	-10.79** (4.996)			
No. of Observations	303	303	No. of Observations	303	303
No. of Institutions	28	28	No. of Institutions	28	28
No. of Instruments	25	27	No. of Instruments	25	
	Validity Test			Validity Test	
AR(1)	-1.02 (0.307)		AR(1)	-1.02 (0.308)	-4.09 (0.000)
AR(2)	0.90 (0.371)		AR(2)	0.87 (0.385)	0.54 (0.589)
Sargan	3.35 (1.00)		Sargan	3.43 (1.00)	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The *Shari'ah* board is significantly and negatively related to SNCR. This means that it plays a role in lowering SNCR; it appears to be effective with respect to the management and control of SNCR. SBP and SECP have developed an effective and appropriate criterion for members of *Shari'ah* boards and focused on the training of SB in other relevant fields. They also conclude that boards, with their financial expertise, have a negative relationship with SNCR. *Shari'ah* boards also have a significant and negative relationship with institutional insolvency. This indicates that SBs play a positive role related to solvency, which supports the theoretical arguments of Islamic financial contracts; for example, those of Rehman Shah et al. (2019) and Rashid et al. (2024).

Furthermore, ownership concentration is negatively and significantly related to SNCR. This might be due to the fact that when ownership is concentrated, shareholders are able to closely oversee the activities of the institution. Owing to the loss of income incurred by *Shari'ah* non-compliance, shareholders strictly control the operations of the institution. Similarly, SNCR creates reputational risk and the confidence of shareholders might drop due to non-compliance with Islamic law (Basiruddin & Ahmed, 2020; Shah et al., 2021). Larger shareholders have a positive disciplinary impact on managers because it is easier for them to conduct monitoring thanks to their strong influence (Shleifer & Vishny, 1986, 1997). Consequently, it decreases the agency problem and in turn improves performance (Jensen & Meckling, 1979). Furthermore, Rashid et al. (2024) document that ownership concentration has an insignificant relationship with insolvency.

With regard to institution-specific variables, institution size is positively and significantly related to SNCR and solvency. As the financing of institutions increases, the probability of *Shari'ah* non-compliance also increases. If an institution is aggressive in terms of financing, it may be more exposed to SNCR. Institution size is positively related to its solvency. As larger institutions are able to meet their liabilities easily and in a timely fashion, they tend to be more stable (Rashid et al., 2017). Capital buffers and GDP also contribute positively toward institutional solvency, although inflation has a negative relationship. This means that inflation weakens the stability of institutions. All other institution-specific and macro variables have inconsistent and insignificant relationships with SNCR.

In Model (2), it can be noted that CG is negatively and insignificantly related to SNCR. However, interestingly the coefficient of the interaction between CG and institutional quality is significant and positive. It can also be seen that the relationship between SNCR and institutional quality is negative. This means that if institutional quality at the country level is strong, the non-compliance risk tends to be low. The corporate governance construct has a significant and negative relationship with the solvency of institutions, but does not positively contribute to the solvency of the financial sector. Turning to the role of the interaction term, a negative relationship was found. Institutional quality has an insignificant relationship with solvency.

Further, institution size is negatively and significantly related to SNCR. As discussed earlier, as the size of the asset increases the control of the institution might decrease which results in an increase of SNCR. Consistent to previous results, institution size has a positive relationship with solvency. Capital buffer is inversely and significantly related to SNCR. In order to satisfy equity holders,

the board of directors and *Shari'ah* board will try to reduce SNCR. Capital buffer has a positive relationship with the solvency of Islamic financial institutions. Next control variable is advances to total assets, which is positively related to SNCR. SNCR risk is mostly related to financing and investment activities of the institution. Therefore, with the increase in such activities the probability of SNCR also increases. Thus, the relationship with advances to total assets is positive.

The log of GDP is positively related to SNCR. GDP has a positive impact on the growth of the financial sector, including the Islamic component (Ashraf et al., 2016; Muhammad et al., 2019; Shah et al., 2020). As the financial sector grows, financing and investment activities also increase. As these activities increase, the risk of non-*Shari'ah* compliance also increases, which results in SNCR. Previous studies have found an inverse relationship between inflation and the profitability of financial institutions (Bilal et al., 2013; Tawfik & Elmaasrawy, 2024). When profitability falls, the pressure on institutions for its regrowth increases. Therefore, in a given scenario, the issue of non-compliance may arise and some transactions may fall into the void category. This might be one reason for the inverse relationship between CPI and SNCR. The relationship between KIBOR and SNCR is also negative and significant. However, all other institution-specific and macroeconomic variables have insignificant relationships with the solvency of Islamic financial institutions.

V. CONCLUSION AND POLICY IMPLICATIONS

The study has analyzed the effects of corporate governance (including *Shari'ah* governance) indicators on risk-taking practices (*Shari'ah* non-compliance risk and solvency risk) in Islamic financial institutions in Pakistan. It has also investigated the moderating role of institutional quality (IQ) in determining these effects. A sample of 28 institutions, including Islamic commercial banks, *Takaful* operators and *Modarb'ah* companies over the period 2011-2022 was analyzed empirically using a GMM estimator. The findings suggest that several individual characteristics of corporate governance and its index are significantly related to *Shari'ah* non-compliance risk and the Z-score (solvency risk). The results reveal that institutional quality also significantly contributes in reducing the risk level.

The findings also suggest that modern practices of corporate and *Shari'ah* governance to manage *Shari'ah* non-compliance risk and the solvency of Islamic financial institutions (IFIs) be adopted. Furthermore, it is also recommended that governments improve the quality of institutions, which play a vital role in shaping the effect of governance on risk-taking. IFIs should engage all stakeholders in developing inclusive governance standards, which are both practically and culturally viable. Furthermore, they should increase their understanding of higher management in relation to SNCR. Moreover, IFIs can develop a standardized structure of transactions to reduce SNCR. Policymakers have a responsibility to utilize their knowledge of Islamic economics when formulating policies. The Islamic economic system is a fertile field of study for future researchers, as it is rooted in the foundational principles of Islamic doctrine. The government of Pakistan has a particular responsibility to adhere to the timelines set by the FSC's ruling on the *Riba* (interest) issue, specifically as of 28 April, 2022, and as per the amendment made in the Constitution of Pakistan under Article 38(f).

Finally, several limitations of our study are acknowledged. First, we included only fully fledged IFIs. Those with a window setup could also be included and explored in future studies. Furthermore, additional variables of governance and risk could be included in future research. The research could also be expanded by including other countries such as Malaysia, Indonesia and the UAE for additional insights.

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