CORPORATE GOVERNANCE, CREDIT RISK AND THE FINANCIAL SOUNDNESS OF BANKS

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Abstract

Purpose. This study aims to explore the role of corporate governance (CG) in the financial soundness of banks in Pakistan.

Design/methodology/approach. We analyzed the panel data of 21 commercial banks in Pakistan from 2006 to 2017. The CG score was measured in a composite manner based on: the audit committee, board size and independence, CEO duality, and managerial ownership. Financial soundness was measured using Z-scores based on the ROE & ROA of banks.

Findings. The results show a positive role of CG in the financial soundness of banks in Pakistan. Further findings show that an increase in credit risk plays a negative role in banks' financial soundness. Moreover, the interaction of CG and credit risk positively impact banks' financial soundness. Specifically, the risk management side of CG ensures the banks' financial soundness in Pakistan.

Originality. The findings provide important policy implications for the policymakers

of Pakistan who are responsible for financial soundness in the country, suggesting that the focus on risk-taking channels be maintained.

Keywords: corporate governance, financial soundness, risk-taking channel, banks

JEL Classification: G-1, G-32, G-33, G-34.

1. Introduction

Corporate governance (CG) can be defined as a relationship among different stakeholders, including management, shareholders, and directors. CG helps to set, monitor, and achieve a company's objectives. The early 1990s witnessed enhanced CG awareness for the better management of the affairs of big firms following many failures. In the U.S., events at Enron and WorldCom led to the Sarbanes-Oxley Act in 2002, which sought to improve the CG environment. The CG of banks emerged when the OECD introduced a code of CG, and many developed countries subsequently designed related policies.

The banking sector has huge leverage, and this fact makes it important for the overall stability of the economy (Adams & Mehran 2003). Banks have multidimensional exposures, and the failure of a bank may not only affect its direct stakeholders (depositors). Rather, it may become a systemic event for the overall financial sector, triggering deceleration (in real GDP growth) or even a recession in an economy. A bank's CG is essential in order to predict its behavior and ensure its financial soundness (Laeven & Levine, 2009).

A bank's governance structure depends on the risk environment, the nature of the business, and dealing with rules and regulations. In the current era, the banking business environment has changed due to the rapid growth of banking services. Moral hazards and problems can imbalance the banking system, and the customer pays the cost of this financial imbalance as it may create financial crises. The financial system and bank depositors are crucial stakeholders in the banking industry because of their large stakes in banks. The role of CG is critical to safeguarding the interests of the bank's depositors and the economy, as is evident in recent literature on the 2008 global financial crisis.

The Financial Stability Board (2017) also recommend that financial institutions learn one key lesson from the 2008–2009 global financial crises in the shape of "strong corporate governance for financial soundness." The October 2018 issue of the Global Financial Stability Report (GFSR; IMF, 2018) assessed whether banks were stable, and highlighted systemic problems that could jeopardize financial soundness. The GFSR observed that the banking system is currently more robust due to improved regulatory frameworks, but also warned of new vulnerabilities and suggested new priorities for many countries. For some countries, these priorities included improving the CG mechanism.

Thakor (2018) claimed that the 2007–2009 financial crisis was not due to a liquidity crisis; instead, it was insolvency-based in nature. Thus, regulatory reforms should be

introduced, including banking governance, capital requirements, better business models for bankruptcy, and an enhanced regulatory structure. Leung, Song, and Chen (2019) found that directors of banks are entrusted with a legal duty to care for all stakeholders and safeguard their long-term interests. Stakeholders' interests can be protected by taking significantly less risk and increasing capital to ensure the financial soundness of banks.

The SECP, the regulator in Pakistan, promulgated the CG code in March 2002. The SECP kept improving CG mechanisms (e.g., improving financial reporting) to enhance transparency and governance and to protect investors' interests. In a 2017 revision, the CG SECP code adopted many enhancements regarding controlling risk, board independence, and audit committees. To strengthen financial soundness, the Central Bank of Pakistan (SBP) also introduced a CG code for the banking sector by issuing a CG handbook in 2003. The essential guidelines of this handbook included those relating to the board of directors, management, shareholders, and the managers of banking companies. In Pakistan, several small banks merged with other banks following the necessary conditions for banks to maintain minimum capital outlined by the regulator. A recent example of amalgamation is KASB Bank, which merged with Bank Islami due to its failure to maintain minimum capital requirements. Such cases motivated us to explore the state of CG in Pakistani banks and its impact on financial soundness. The role of risk channels is also essential in achieving financial soundness objectives.

No study in Pakistan has comprehensively assessed the implementations of a CG code, excessive risk-taking practices, and their role in financial soundness in Pakistan. Available studies on CG in Pakistan cover only nonfinancial firms. Therefore, a research gap regarding studying financial firms, especially banks, emerged. On theoretical grounds, the indirect role of CG in financial soundness through risk channels has still not been explored. Most of the available literature on the CG of banks and financial soundness uses a single variable approach to measure both CG and banks' soundness. CG is multi-dimensional, ranging from board size, CEO duality, board independence, audit committee independence, and managerial ownership. In this paper, multiple variables are used to create a comprehensive CG index and assess its impact on banks' financial soundness in Pakistan in 2006–2017. This study uses total assets to total equity, debt to total equity, macroeconomic conditions, banking structure, and regulatory governance as control variables. Further, this work explores risk channels by adding the role of credit risk in financial soundness and, subsequently, considering the interaction term of CG and credit risk in the financial soundness of banks.

The remainder of the paper is organized as follows: Section 2 consists of a brief literature review and a discussion of the theoretical framework. Section 3 explains the research methodology, data, and the model used. Section 4 reports the results along with a brief discussion. Finally, Section 5 concludes the paper and sheds some light on important policy implications.

2. Literature Review

2.1 Corporate Governance

CG is defined as "the process to direct and control the companies" (Cadbury, 1992). Better CG comes as a result of superior internal and external CG tools. An internal CG system is vast, and it is not only bound to the hierarchy of the board of directors and its value in observing the bank's management. Contrarily, external CG mechanisms include government rules, principles and directions, and market control (Fanta, Kemal &Waka, 2013). Rehman and Mangla (2010) also highlighted that the better CG of banks encourages the accountability of their higher management.

The concept of CG evolved in the 20th century when legal scholars such as Edwin Dodd, Adolf Augustus, Berle, and Means met to discuss the role of modern corporations in society after the 1929 Wall Street crash. Jensen and Meckling (1976) highlighted the principal-agent problem in agency theory. Agency theory provides the theoretical foundation for the concept of CG. In the 1990s, the CG concept emerged, and an overwhelming number of studies highlighted its impact. The Cadbury Report in the UK in 1992, the Principles of CG (OECD, 1999, 2004), and the U.S. Sarbanes-Oxley Act of 2002 form the foundations of the current CG codes.

In the financial sector, the Gramm-Leach-Bililey Act in 1999 provided the way forward for CG in the financial sector. This is also known as the Financial Modernization Act. De Haan and Vlahu (2015) emphasized that CG for the financial sector is different from the nonfinancial sector due to the nature of its businesses, capital requirements, and regulations. They reported that the poor CG of banks might result in a financial crisis. Most research on CG excludes the financial sector due to the unique nature of business, regulation, and capital requirements in this area. This fact makes CG an essential topic in the financial sector. Husain (2005) emphasized that the CG of banks is more critical than that of nonfinancial firms. Recently, Anginer, Demirgüç-Kunt, Huizinga, and Ma (2018) and Bodellini (2018) also studied the CG of banks and highlighted the benefits for banks.

2.2. The Concept of Financial Soundness

Financial soundness is a crucial element of the financial system for its smooth functioning, i.e., the intermediation of funds, risk management, and payment functions. Historically, the concept of financial soundness has roots in the initial work of Keynes and Minsky, who worked on determinants of instability in the financial system. Minsky's theories of financial instability were highlighted during the subprime mortgage crisis in the 2000s. Conventionally, monetary stability was the central bank's focus. Now, the central bank focuses on financial soundness due to the many changes in the business environment. Schinasi (2004) defined financial soundness as a situation in which the financial system can absorb shocks, possessing efficient resource allocation and the management of financial

risk. The financial sector is more fragile than the nonfinancial sector and may incur extra risks. Moreover, the financial instability of one bank can endanger the country's overall financial system and create distress that mirrors the situation in the financial system.

Numerous models are available in the literature to measure corporate failures/insolvency. The Z-score model is well-known for predicting corporate failure. Edward Altman proposed the Z-score model in 1968. Other models include Deakin's model (1972), that of El Hennawy and Morris (1983), and Dwyer and Wallace's (1992). The prediction of the failure of banks is a different phenomenon, and is difficult. Therefore, Aktug, Nayar, and Geraldo (2013) developed a Z-score model as a financial soundness indicator for the banking sector. Lassoued (2018) measured bank soundness using Z-Score in Malaysia from 2005 to 2015. In Pakistan, Rashid and Abbas (2011) used the data of nonfinancial firms which became insolvent from 1996 to 2006. There is a need to explore financial firms' soundness using a Z-score methodology in Pakistan.

2.3. Banks' Corporate Governance and Financial Soundness

The better CG of banks is important for performing basic functions and for the integrity of the financial system. Wymeersch (2008) called CG an excellent tool to achieve the financial soundness of banks. Aktug, Nayar, and Geraldo (2013) studied the role of CG in financial soundness and found that the CG positively impacts banks' financial soundness. CG improvements are vital for financial system soundness (Jassaud, 2014).

Similarly, Kim and Kim (2014) also found a positive effect of the CG of banks on banks' soundness in the banking sector by considering 34 OECD member countries (using a z-score methodology). Jugurnath and Sambadoo (2016) reported the positive effects of CG on financial soundness in Mauritius. Similarly, Bodellini (2018) found that the poor CG of banks may endanger financial soundness. In Pakistan, Adnan, Rashid, Meera, and Htay (2011) also found positive effects of CG on financial soundness.

The concept of banks' CG comprises different bank practices, including the independence of the audit committee, board independence, CEO duality, board size, and managerial ownership.

2.3.1. Board Size and Financial Soundness

Mak and Yuanto (2003) revealed that board size affected the board's work, and recommended a five-member board. The Basel Committee on Banking Supervision (2006) emphasized that the board of directors should evaluate its own performance, control where weaknesses exist at regular intervals, and take suitable corrective actions where possible. However, Lassoued (2018) found no evidence of the impact of bank size on bank soundness in Malaysia using data from 2005 to 2015.

2.3.2. Board Independence and Financial Soundness

The ratio of NED, i.e., non-executive directors, is essential for effective and efficient monitoring and enhancing board members' independence (Thomsen & Conyon, 2012). Lassoued (2018) found that the director's independence positively impacts bank soundness in Malaysia using data from 2005 to 2015.

2.3.3. Audit Committee Independence and Financial Soundness

The audit committee's independence may convince management to carry out just and reasonable practices and discourage management from focusing on only profit-making objectives. Güneş and Atlgan (2016) compared the effectiveness of UK and Turkish banks' audit committees, and found a weak association. Miko and Kamardin (2016) also found evidence of the effectiveness of audit committee independence in Nigeria.

2.3.4. CEO Duality and Financial Soundness

The CEO of any bank is the head of the management and looks after all bank affairs, while the Chairman is the head of the board. Best CG practices propose that the CEO and Chairman should be separate. Pathan (2009) reported that CEO duality enhances bank risk.

2.3.5. Ownership Structure and Financial Soundness

As per the findings of Adams and Mehran (2003), managers may act more like principals and less like agents if they have significant equity stakes. Iannotta, Nocera, and Sironi (2007) revealed the agency problem and reported fewer chances of conflict in the case of ownership and control separation. Tandelilin, Kaaro, Mahadwartha, and Supriyatna (2007) found that foreign banks have better CG. Laeven and Levine (2009) reported that risk (proxied by Z-score) is usually higher in banks with controlling shareholders with large shares. Mongiardino and Plath (2010) also emphasized that better governance can reduce banks' defaults. Javid and Iqbal (2010) stated that, due to capital transfer to large shareholders, there might be the chance that smaller (external) shareholders face expropriation risk. Ownership distribution impacts firm management, as proposed by agency theory (Hsiesh, Chen, Lee, & Yang, 2013).

2.4. Banks' Corporate Governance, Credit Risk, and Financial Soundness

Two problems, i.e., adverse selection and moral hazards, are common in banks. Akerlof (1970), using lemon theory, proposed that information asymmetry will create an inefficient credit reference bureau system for banks and regulatory bodies. This may lead banks to

select bad loans due to moral hazards and adverse selection problems. Banks' risk management is global in its focus (Saunders & Cornett, 2006). Laeven and Levine (2009) reported less risk due to the good governance of banks.

Similarly, Aebi, Sabato, and Schmid (2011) also emphasized that risk governance is essential for banks to avoid a financial crisis. Lagasio and Cucari, (2019) surveyed the literature and concluded that good CG practices reduced banks' risk in the last 35 years of CG literature. Similarly, Moussa (2019) found that bank governance received attention after the 2008 financial crisis, and that better CG practices increase credit quality. Therefore, better credit quality will eventually decrease the banks' risk.

Risk management, especially credit risk management, is an important policy area for banks, as higher credit risk threatens banks' financial soundness (Herring, 1999). The Basel Accord focused on credit risk, and many loopholes were identified during the financial crisis (Jayadev, 2013). Anginer, Demirgüç-Kunt, Huizinga, and Ma (2018) also found that poor CG may be a more systemic risk. Honey, Tashfeen, Farid, and Sadiq (2019) reported that the effective CG of banks improves banks' credit risk management in Pakistan. In recent studies, Quang and Gan (2019) found a positive relationship between risk and the soundness of banks.

Better risk management results in better financial performance during a financial crisis (Aebi, Sabato, and Schmid, 2011). More specifically, Gadzo, Kportorgbi, and Gatsi (2019) found a negative relationship between credit risk and financial performance in banks in Ghana. However, a recent study by Xu, Hu, & Das (2019) suggested that sources of profitability should be carefully monitored as they may create unstable banks due to excessive risk-taking. The role of risk channels in the relationship between CG and financial soundness presents a research gap. The good CG of banks is helpful in stable banks, although it is not a complete alternative to banking supervision (Laeven, Ratnovski & Tong 2014). In a recent study, Lapu (2015) suggested the indirect role of banks' CG in their financial soundness through supervision. The indirect role of banks' CG in financial soundness through risk channels has still not been empirically explored.

2.5. Theoretical Framework and Research Hypothesis

Jensen and Meckling (1976) proposed an agency theory that highlights the agency problem due to the separation of control and ownership. Agency theory proposes a conflict of interest among different stakeholders. Therefore, a situation may emerge where a central bank's regulatory body guides, controls and monitors the bank's management. Mayes, Halme, and Liuksila (2001) proposed a reasonable balance between stakeholders such as owners (shareholders), depositors, managers, creditors, and supervisors. Tse (2011) suggested that the financial crisis has restarted the general stakeholder and shareholder theory debate, and recommended protecting non-shareholders' interests.

In a narrow approach, the CG mechanism assures shareholders of managers' rights protection. However, the unique nature of banks may highlight the need for depositor

protection and suggest revisiting shareholders' and managers' relationships (Arun & Turner, 2004). In the case of banks, there may be a conflict between regulators and shareholders. Shareholders may motivate managers to earn more profit, while the regulator (like the central bank) is more concerned with the soundness of the financial system.

Stakeholders and investors have high interests and stakes in the banking sector, so the associated risk is complicated and higher. The central bank also encourages prudent risk-taking practices to maintain the financial soundness of the individual bank and the whole financial system. Conversely, shareholders and investors motivate the bank's management towards excessive risk-taking practices. The bank designs attractive compensation schemes to stimulate the top management and executive managers to perform riskier practices and earn more profit. The government focuses more on the financial sector than other non-financial sectors due to its broader implications for the financial system. According to Flannery (1998), bank may take more risk for different reasons. Therefore, Laeven and Levine (2009) reported that the bank's governance might require prudent risk-taking by banks.

This study is designed to identify the role of the CG of banks in the financial soundness of banks (covering the period from 2006 to 2017 in Pakistan). The indirect role of banks' CG in financial soundness through risk channels has not yet been explored theoretically and empirically. This study represents an effort to find empirical evidence of the direct and indirect role of banks' CG in financial soundness. The indirect role of banks' CG in financial soundness is estimated through risk channels. Moreover, this study uses the following control variables: bank size (total asset to total equity), financial leverage, banking structure, macroeconomic conditions, regulatory governance, and political stability. A theoretical framework is thus developed based on the above-cited literature.
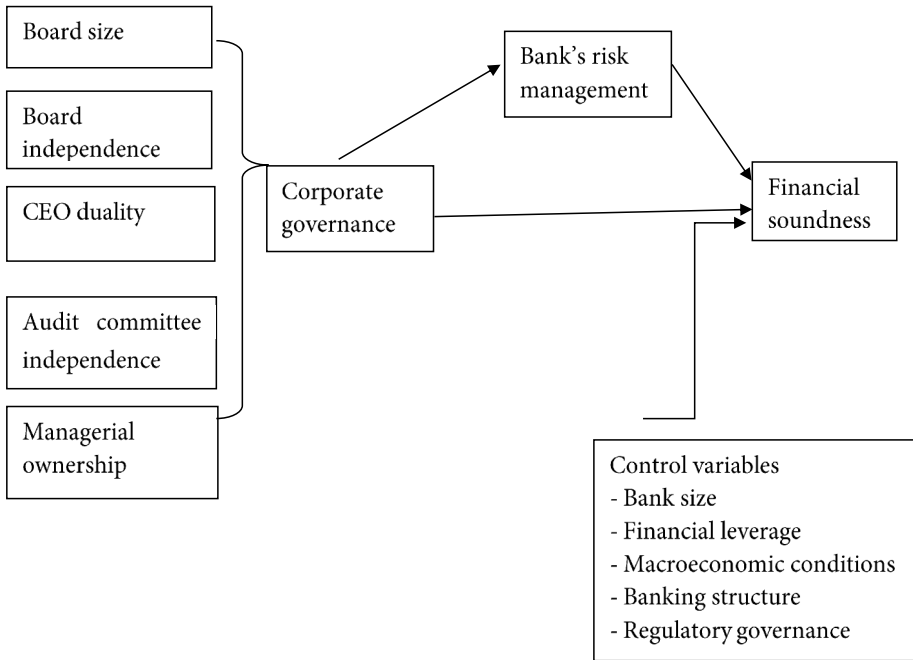
Figure 1. *Theoretical framework*

H_1: CG positively impacts banks' financial soundness in Pakistan.

H_2: Bank risk-taking negatively impacts the financial soundness of banks in Pakistan.

H_3: The CG and risk-taking practices of banks interact with banks' financial soundness in Pakistan.

3. Model, Data, and Econometric Methodology

3.1. Measurement of the Bank's Financial Soundness

This paper measures financial soundness through the Z-score of banks based on a 3-year rolling window. Z-scores show banks' financial soundness. The data is normalized using the normalization process following Morris (2011). The following formula is used in this study:

Table 1. Measurement of the financial soundness of banks

Variables	Indicators (measurement)
1) Financial soundness (bank's default probability)	$Z = \dfrac{(ROA+Equity/Asset)}{\text{banks Sd. of ROA}}$

3.2. Measurement of the Corporate Governance of Banks

CG is the independent variable, and is measured using a proxy technique based on audit committee independence, board size, board independence, CEO duality, and managerial ownership in a composite manner. A CG index based on these indicators is developed for all banks. Table 2 elaborates on the details of the construction and measurement of the variables.

Table 2. Measurement of CG index of banks

Indicators	Explanation and measurement of dummy variable
Size of board	Board size indicates the number of directors (total), and we allocate 1 if a bank's number of board members is more than 7 and 0 otherwise.
Board independence	Board independence refers to the percentage of outside directors on the board per bank. We allocate 1 if more than 75% of directors are independent and 0 if less than 75% are independent.
CEO duality	When the CEO is also the board's chairperson, this is known as CEO duality. We measure 1 if the CEO is not working as a board chairperson and 0 if the CEO is a board chairperson.
Audit committee independence	Audit committee independence indicates the total number of independent directors in each bank. We allocate 1 if more than 75% of directors are independent and 0 if less than 75% are independent in the audit committee, including the chairperson.
Managerial ownership	This indicates the percentage of shares held by the executive director and senior management divided by the total number of shares in each bank. We allocate 1 if the percentage is more than 50% and 0 if the percentage is less than 50%.

3.3. Measurement of Credit Risk

In a recent study, Wood and Kellman (2013) studied risk management practices and found credit risk essential for banks. Recently, Honey, Tashfeen, Farid, and Sadiq (2019)

used credit risk as a proxy for the risk-taking practices of banks. Therefore, this study uses each bank's credit rating in the S & P Global as a proxy for credit risk.

3.4. Control Variables of the Study

This study uses a comprehensive set of control variables: bank size (total asset to total equity), financial leverage (total debt to total capital), macroeconomic conditions (credit growth as % GDP), banking structure (bank concentration), regulatory governance, and political stability. These indicators are also used as world governance indicators by the World Bank.

3.5. Empirical Model

This paper uses the two-step GMM (generalized method of moments) system approach, which Arellano and Bond developed in 1991, followed by Arellano and Bover in 1995, Arellano and Bond in 1998, and Blundell and Bond in 1998. The estimation was carried out using the xtabond2 command developed by Roodman in 2005 and 2009. The equations for econometric modeling are given below to describe the relationships of the variables:

$$FSI_{i,t} = \beta_0 + \beta_1 FSI_{i,t-1} + \beta_2 CG_{i,t} + \beta_3 Size_{i,t} + \beta_4 FL_{i,t} + \beta_5 MC_{i,t} + \beta_6 BS_{i,t} + \beta_7 RG_{i,t} + \beta_8 PS_{i,t} + \mu_{1i,t}$$
(Eq. 1);

$$FSI_{i,t} = \beta_0 + \beta_1 FSI_{i,t-1} + \beta_2 CG_{i,t} + \beta_3 CR_{i,t} + \beta_4 CGS*CR_{i,t} + \beta_5 Size_{i,t} + \beta_6 FL_{i,t} + \beta_7 MC_{i,t} + \beta_8 BS_{i,t} + \beta_9 RG_{i,t} + \beta_{10} PS_{i,t} + \mu_{2i,t}$$
(Eq. 2);

where FS – financial soundness, CG – corporate governance, CR – credit risk, CGS*CR – interaction term (CGS & CR), Size – bank size, FL – financial leverage, MC – macroeconomic conditions, BS – banking structure, RG – regulatory governance, PS – political stability, and $FS_{i,t-1}$ – lag of dependent variables' financial soundness, and μ – error term.

3.6. Econometric Methodology

The study's research design is quantitative, and the results were estimated using both static and dynamic panel estimation techniques. The static and dynamic panels estimate the impact of CG on financial soundness after controlling for bank size (total asset to total equity), financial leverage, macroeconomic conditions, banking structure, regulatory governance, and political stability. Model 1 and 2 show the results of static panel regression. Model 1 shows the results of pooled OLS, and model 2 shows the panel regression fixed-effect model results. A lag term (A.R.) of the dependent variable, i.e., financial soundness, was added to the static model in models 3 and 4. In sample data, $N > T$, as it includes over 10 years of data with over 20 banks.

Financial soundness has some problems, including the endogeneity problem of the

lagged dependent variables, unobserved panel heterogeneity, omitted variables bias, auto-correlation, and measurement errors. Another problem with longitudinal data is its short panel, i.e., $N > T$, when the number of cross-sections (N) is higher than the period (T). This study has $N = 21$ while $T = 12$; therefore, the GMM approach introduced by Arellano and Bond (1991) is the best choice for estimation. The two-step GMM system is the best solution for these problems of longitudinal data, especially the endogeneity problem, and to avoid spurious estimation. Panel GMM is a generic method for estimating parameters in statistical models.

The two-step GMM system is used for the accurate estimation of the impact of CG on financial soundness and its indirect role through risk channels. All of these results are presented in Table 5 to show the complete rationale of the methodology used in this study. For robustness, Z-score is calculated on all banks' bases and tested. This study applies the Arellano–Bond (A.R.) test to detect zero autocorrelation in the first-differenced dependent variable, i.e., financial soundness. Hansen's (1982) J-Statistics tests show the instrument's validity, and the null hypothesis fails to reject or show support in favor of this instrument.

3.7. Data and Sample Period

The sample size is 21 Pakistani banks, and the period of study is 2006–2017. This longitudinal data creates a balanced panel study of 21 cross-sections and a 12-year time span, with 252 total observations. Financial statements were used to collect data.

4. Empirical Results and Discussion

4.1. Correlation Analysis

The results show the relationship among variables used in the study.

Table 3. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Financial soundness	1.00								
(2) Corporate governance	0.13**	1.00							
(3) Risk-taking	−0.01	−0.11*	1.00						
(4) Bank size	−0.13**	0.10	−0.03	1.00					
(5) Financial leverage	−0.08	−0.01	−0.35***	0.09	1.00				

(6) Macroeconomic conditions	−0.03	−0.25***	−0.10*	0.06	0.03	1.00			
(7) Bank concentration	−0.02	−0.23***	−0.12*	0.03	−0.01	0.72***	1.00		
(8) Regulatory governance	−0.01	−0.20***	−0.02	0.04	−0.01	0.82***	0.64***	1.00	
(9) Political stability	−0.01	−0.08	0.07	−0.06	−0.05	0.13**	0.44***	0.26***	1.00

4.2. Empirical Results

The results were estimated using GMM estimation techniques. Model 1 and 2 show the panel regression results (statics). Model 1 shows the results of pooled OLS, and model 2 shows the panel regression fixed-effect model results. In the Pooled OLS in model 1, the CG of banks positively impacts financial soundness. The panel regression fixed effect shows a statistically insignificant effect of CG on financial soundness. The *R*-squared of both models is also very low, with the Durbin–Watson test showing autocorrelation in the data. The results suggest that static panel models cannot provide true inferences as to the impact of banks' CG on financial soundness. The results indicate that static panel models cannot predict the effects of CG on financial soundness. Therefore, the dynamic panel estimation technique was used to better estimate the results. A lag term (A.R.) of the dependent variable, i.e., financial soundness, was added into the static model in models 3 and 4. The lag of the dependent variable turned statistically significant, which shows the presence of the A.R. term in the models. In models 3 and 4, CG has no impact on financial soundness.

These results confirm the presence of endogeneity and autocorrelation in the data. In sample data, $N > T$, as it includes over 10 years of data with over 20 banks. Therefore, the two-step GMM system was used for accurate estimation. All of these results are presented in Table 4 to show the complete rationale of the methodology used in the study.

Table 4. Estimation results – the impact of CG on the financial soundness of banks

	(1)	(2)	(3)	(4)
	Static Panel		Dynamic Panel	
Description(Var)	OLS (Pooled)	Panel–FE Model	OLS(Pooled)	Panel–FE Model
Financial soundness (−1)			0.949*** (0.022)	0.589*** (0.057)
Corporate governance	0.026** (0.012)	0.006 (0.007)	0.002 (0.004)	0.000 (0.006)

Bank size	−0.165**	0.024	−0.009	0.019
	(0.076)	(0.048)	(0.026)	(0.039)
Financial leverage	−0.161	−0.251***	−0.071	−0.166***
	(0.150)	(0.064)	(0.049)	(0.054)
Macroeconomic conditions	−0.001	−0.002	−0.005***	−0.004***
	(0.004)	(0.002)	(0.001)	(0.001)
Banking structure	0.002	−0.001	0.021***	0.015**
	(0.021)	(0.008)	(0.007)	(0.007)
Regulatory governance	0.164	0.154	0.385***	0.309***
	(0.337)	(0.124)	(0.111)	(0.103)
Political stability	−0.028	−0.024	−0.037	−0.032
	(0.106)	(0.039)	(0.034)	(0.032)
Constant	0.245	0.402***	0.179	0.297**
	(0.388)	(0.148)	(0.125)	(0.121)
R-squared	0.044	0.084	0.902	0.405
Breusch–Pagan (*p* > chi-square)	37.40 (0.000)	.	142.31 (0.000)	.
Wooldridge (*p* > *F*)	24.58 (0.001)	24.28 (0.001)	.	.
Number of banks		21		21

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

4.3 Empirical Estimations: Two-Step System GMM

Table 5 reports the GMM estimation results for the direct and indirect role of CG in financial soundness through risk channels. The dependent variable's financial soundness coefficient lag is statistically significant, with a *p*-value of less than 1% at a 1-year lag length. This fact shows the dynamic nature of financial soundness. CG has a statistically significant coefficient with a positive sign and a *p*-value of less than 5%, indicating the positive impact of CG on financial soundness. These results are consistent and reject the null hypothesis within the extent of the literature. In the next model, credit risk was added to the equation, which is statistically significant, with negative signs showing that improvement in CG reduces the credit risk taken by the bank. The model was further extended by adding an interaction term of CG and credit risk. The results show that the interaction term turned statistically significant with a positive sign. This shows that better CG helps to improve financial soundness while reducing credit risk. This is crucial empirical evidence for this study. Theoretical linkages are available to discuss CG's positive role in controlling banks' excessive risk-taking practices and contributing to banks' financial soundness. However,

empirical evidence in this regard was scarce. This paper contributes to the empirical literature by providing empirical evidence for these theoretical linkages.

Some diagnostic tests are further explained to make the correct inference. The Arellano–Bond (A.R.) test shows no serial correlation or autocorrelation. This result demonstrates that the *p*-value is less than 5%, and more than 5% for AR (1) and AR (2). The results of the GMM model show that the Hansen test statistic *p*-value is 1, while the Sargan test *p*-value is less than 1%. The existing literature indicates that Hansen's (1982) J-Statistics tests show the validity of the GMM instrument, and the failure to reject H_0 leads to supporting the choice of the GMM instrument. The Wald test's *F*-statistic and the Chi-square model are fit to use with a *p*-value of less than 1%. In Table 5, the results are shown in detail.

Table 5. Estimation results – two-step GMM system

VARIABLES	Z-Score (Individual)			Z-Score (Overall)		
	(1)	(2)	(3)	(1)	(2)	(3)
Financial soundness (−1)	0.672***	0.734***	0.671***	0.527***	0.791***	0.557***
	(0.053)	(0.139)	(0.085)	(0.024)	(0.101)	(0.081)
Corporate governance	0.007**	0.015**	0.014**	0.003	0.035	0.025*
	(0.003)	(0.007)	(0.006)	(0.010)	(0.028)	(0.013)
Risk-taking practices		−0.138**	−0.997**		−0.145*	−1.526*
		(0.057)	(0.461)		(0.087)	(0.879)
CG*RTP			0.520**			0.783*
			(0.222)			(0.429)
Bank size	−0.043*	0.033	−0.042	−0.315***	−0.133***	−0.294***
	(0.023)	(0.022)	(0.047)	(0.039)	(0.035)	(0.064)
Financial leverage	−0.092	−0.631***	0.098	0.234***	−0.626**	0.150
	(0.089)	(0.224)	(0.107)	(0.072)	(0.309)	(0.333)
Macroeconomic conditions	−0.004***	−0.004***	−0.003***	−0.006***	−0.006***	−0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Banking structure	0.025***	0.022***	0.031***	0.045***	0.054***	0.057***
	(0.005)	(0.008)	(0.005)	(0.008)	(0.014)	(0.016)
Regulatory governance	0.314***	0.262***	0.234***	0.286***	0.439***	0.316***
	(0.043)	(0.077)	(0.044)	(0.080)	(0.123)	(0.055)
Political stability	−0.021**	−0.013	−0.062***	−0.101***	−0.083	−0.139***
	(0.010)	(0.020)	(0.015)	(0.034)	(0.060)	(0.050)
Constant	0.187*	0.561***	−0.195	−0.067	0.403	−0.245

	(0.107)	(0.212)	(0.129)	(0.181)	(0.416)	(0.477)
AR (1)	−1.884	−2.147	−2.278	−1.976	−2.758	−2.309
AR (1) *p*-value	0.05	0.03	0.02	0.04	0.00	0.02
AR (2)	−0.634	−1.053	−0.243	−0.734	−0.333	−0.391
AR (2) *p*-value	0.52	0.29	0.80	0.46	0.73	0.69
Sargan test	29.52	5.134	67.90	65.38	13.45	82.55
Sargan test *p*-value	0.07	0.52	0.00	0.00	0.03	0.00
Hansen test	12.63	7.188	12.12	11.58	4.089	13.08
Hansen test *p*-value	0.89	0.30	1	0.93	0.66	1
No. of instrument	29	16	54	29	16	54
Wald test chi-square	68731	2901	3158	6770	76628	2149
Wald test chi-square *p*-value	0.00	0.00	0.00	0.00	0.00	0.00
Number of banks	21	21	21	21	21	21

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

4.4 Discussion of Results

The analysis results show the positive role of banks' CG in the financial soundness of banks from 2006 to 2017 in Pakistan. The fact that CG improves banks' financial soundness is aligned with the literature, which is the main argument of this paper. In the two-step GMM system models, the lag of the dependent variable, i.e., financial soundness, also positively and significantly contributed to the financial soundness of banks. Therefore, the findings are aligned with past studies and show overwhelming support for using the two-step GMM system to avoid the endogeneity problem of the lagged dependent variables, unobserved panel heterogeneity, omitted variables bias, autocorrelation, and measurement errors. The endogeneity problem is expected in the banking industry, and lagged dependent variables also contribute to the future financial soundness of banks.

The main result of this study, i.e., that better CG helps to ensure financial soundness in Pakistan, confirms the findings of Aktug, Nayar and Geraldo (2013), who used panel data from 2003 to 2010 for 18 emerging countries. This study also confirmed the findings of Jassaud (2014), Wymeersch (2008), Jugurnath and Sambadoo (2016), and Kim and Kim (2014). The study results are consistent with those of Leung, Song, and Chen (2019), who found that it is the legal duty of directors of banks to take less risk and protect the interests of all stakeholders. These study results show the positive role of banks' CG in financial soundness from 2006 to 2017 in Pakistan. Hence, the main argument of this paper proves that better CG results in the financial soundness of banks.

This model was extended by adding credit risk and CG, which hurt banks' financial soundness. The model was then further extended by adding the interaction terms of CG

and credit risk along with CG and control variables. The findings indicate that the interaction term turned statistically significant with a positive sign. This shows that better CG helps reduce credit risk and improve the financial soundness of banks. This is crucial empirical evidence for this study. Theoretical linkages are available to discuss CG's positive role in controlling banks' excessive risk-taking practices and contributing to banks' financial soundness. However, empirical evidence in this regard was scarce. This paper contributes to the empirical literature by providing empirical evidence for these theoretical linkages.

5. Conclusion and Policy Implications

The primary aim of the study was to determine the role of the CG of banks in the financial soundness of Pakistan during 2006–2017. This study used static and dynamic panel models and a two-step GMM estimation technique based on STATA 15. To conclude, the overall findings of the results indicate that CG improves the financial soundness of banks. It derives from the above that the CG of banks is used to control banks' risk and enhance the financial soundness of banks. These results suggest that the better CG of banks results in a financially sound banking sector.

Further, better CG helps reduce credit risk, and it also improves financial soundness. This is crucial empirical evidence for this study. There is empirical evidence available to show CG's positive role in controlling banks' excessive risk-taking practices and contributing to banks' financial soundness.

This study's findings are helpful for central banks, academia, and policymakers. The study contributes in many ways, including by exploring the CG of banks, which many studies ignored due to their focus on nonfinancial firms. It is also evident that the composite CG score of the bank has more contribution to overall banking soundness than individual sub-dimensions of CG. Therefore, policymakers should improve CG codes for a secure and stable financial sector and effective risk management. This fact also shows that the better and more transparent management of one bank spreads positive signals in the whole banking industry and contributes positively to securing a stable financial system.

Another critical policy implication of this study is that wider financial soundness positively contributes to the financial soundness of banks. This implies that a stable and secure financial system is necessary for the future financial soundness of banks. This fact also reminds policymakers that creating a secure and stable financial system is not a short-term effort. Creating a stable financial system requires long-term efforts, and CG encourages long-term orientation. Therefore, it is imperative to improve the CG framework for the financial soundness of banks and a stable financial system.

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APPENDIX. 1

List Of Banks			
Sr. No	**Bank Name**	**Sr. No**	**Bank Name**
1	Allied Bank Limited	12	KASB bank
2	Albaraka Bank Limited	13	Muslim commercial bank (MCB)
3	Askari Bank Limited	14	Meezan Bank
4	Bank Al-Habib	15	National bank of Pakistan (NBP)
5	Bank Alfalah Limited	16	NIB
6	Bank Islami	17	Silk Bank Limited (Saudi Pak Commercial Bank Limited)
7	Bank of Khyber	18	Soneri Bank Limited
8	Bank of Punjab	19	Standard Chartered
9	Faysal Bank Limited	20	Summit Bank
10	Habib Bank Limited	21	United bank Limited (UBL)
11	JS bank		