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# Identifying the Moderating Role of Income Smoothing and Credit Quality towards Corporate Governance and Determinants

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## ABSTRACT

Though studies related to corporate governance shaping risk management are ubiquitous, fathoming income smoothing behavior and credit quality are fundamental to commercial banks, especially pertaining to economies in transition. In this context, we used panel data of eighteen commercial banks of Pakistan including both conventional and Islamic, for the period 2007 to 2017. The concept is supplemented by ownership and board structure as apt indicators of corporate governance and deeming income smoothing and credit quality as moderators is the peculiarity of our study. Surprising to note, our risk management model outperformed regulatory capital and profitability, on the road to monitoring effectiveness. Albeit income smoothing constantly remains a matter of concern, credit quality is imperative for risk management in our case. Hence, based on the findings, practitioners are suggested to consider board meetings and block holder ownership with aplomb for monitoring effectiveness of commercial banks in Pakistan. Nonetheless, institutional ownership demands further attention.

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## 1. Introduction

The banking sector of Pakistan has progressed to modern-day banking through significant leaps and bounds. Kudos to the State Bank of Pakistan (SBP) and the Securities and Exchange Commission of Pakistan (SECP), for supporting this transformation after increased concerns related to the reporting behavior of banks by the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) (Andreou et al., 2017). Modern banking systems, including conventional and Islamic, are truly a need of this epoch due to consumerism and globalization. Even though Islamic banks raised concerns regarding their shock-absorbing potential during the financial crisis period (Rahim et al., 2015), customers feel satisfied using their Shariah-compliant products and services.

The commercial banking sector of Pakistan now consists of more than thirty in total (Members Financial Institutions, 2019), from 19 conventional and 5 Islamic banks in the past (Ali and Raza, 2017). Whether banks follow conventional or Islamic banking principles, they are the heart of any financial system as far as they are commercial. The reason is, they mobilize the scattered deposits of the public towards productive purposes, eventually causing economic development (Talpur et al., 2016). Thus, deposits of the public in commercial banks and the duty of care that follow, create a vacuum for better accountability and control that comes with the code of corporate governance. Therefore, it is assumed that well-governed banks are more likely to have stringent policies for investment reviews and risk assessment (Faleye and Krishnan, 2017).

**Table 1.** Commercial Banks Financial Soundness Indicators

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Risk Weighted CAR** | 12.8 | 12.6 | 14.5 | 14.1 | 15.3 | 15.6 | 15 | 15.7 | 16.1 | 15.7 | 15.3 |
| **NPLs to Total Loans** | 6.7 | 9.9 | 12.1 | 14.5 | 15.3 | 14.2 | 12.9 | 11.9 | 11.1 | 9.7 | 8.1 |
| **Provision to NPLs** | 89.1 | 69.3 | 70.1 | 66.9 | 69.9 | 72.1 | 78 | 80.9 | 86.3 | 87.3 | 89.7 |
| **Retun on Assets (After Tax)** | 1.6 | 0.8 | 0.9 | 0.9 | 1.5 | 1.3 | 1.1 | 1.4 | 1.5 | 1.3 | 0.9 |

**Source:** Quarterly Compendium of Statistics of the banking System – State Bank of Pakistan.

Corporate governance indeed plays a vital role for conventional as well as Islamic banks to minimize the risks that could threaten their going concern. The fulfillment of this role depends on various factors including the board of directors, which is subject to increased scrutiny in terms of accountability and performance since the financial crisis (Mollah and Zaman, 2015). Moreover, performance not only depends on profitability but also manifests concerns for prudent handling of credit risk using loan loss provision or capital adequacy ratio (Table 1). At the same time, under the conceptual aspect, credit risk contours the credit quality by differentiating the categories of exposure from varied customers. Hence, requiring consonance between financial stability and lending activities through the capital adequacy ratio, which acts as a buffer against exposure.

Consequently, we consider the importance of corporate governance towards monitoring effectiveness that could not be better expressed without ensuring risk management, sufficient regulatory capital, and better profitability. However, these factors perhaps do not operate in isolation due to income smoothing behavior and estimation of credit quality being still in place, which we admit to capturing through moderating effect. Simultaneously, in our opinion, a blend of ownership and board characteristics are relevant indicators for characterizing micro as well as macro-level corporate governance characteristics. Such as, board characteristics resonate with the internal operating mechanism, while allowing ownership characteristics to justify external exposure. In addition, the determinants of ownership characteristics are consistent with agency theory which specify that an agent should act in the best interest of principals considering the duty of care that is owed, regardless of their self-interest. For instance, incorporating institutional ownership

brings external expertise and control, promoting transparency, whereas block holder ownership stimulates effective monitoring and external exposure.

Hence, we look at the impact of corporate governance on risk management, regulatory capital, and profitability using income smoothing and credit quality as moderators, since we wonder if monitoring effectiveness could still be achieved in the presence of a specific moderator. To provide equal and comparable importance to all aspects of corporate governance towards monitoring effectiveness, we devise twelve hypotheses. In addition to the base case estimates between governance and monitoring effectiveness, we introduce a specific moderator to see the degree of variation. The objective is twofold, first to understand simplified results, and second to concretely quantify the effects if still exist in the presence of a moderator.

By employing a pooled regression approach to the banking sector of Pakistan for the period 2007 to 2017, we recognize that corporate governance best practices improve risk management with an eye on credit quality, along with credit quality being more important than income smoothing. The latter finding is noted as beneficial for the monitoring effectiveness of commercial banks of Pakistan. In addition, the positive relation of board meetings with risk management is already supported by the author of a similar discipline (Gontarek and Belghitar, 2018), meaning that more board meetings determine growth in loan loss provisions, promoting credit quality. Besides, block holder owners prove to be effective monitors based on the vast exposure they possess (Shleifer and Vishny, 1986), towards risk management, through credit quality.

We believe this study to be important because following the financial crisis of 2007 regulatory policies of the banking sector was largely blamed as the primary reason for the crisis. That is why we aim to justify appropriate governance factors such as board meetings and block holder ownership for regulation implication, and suggest practitioners contemplate these factors to overcome financial reporting deficiencies, or otherwise monitoring effectiveness may perhaps be at stake.

The rest of the paper is organized as follows. Section two reviews the literature to devise relevant hypotheses and functional form, keeping in view the gaps identified. The third section presents the sample, data, conceptual framework and variable description. The fourth section reflects empirical results. And the last section provides a conclusion, implications and recommendations.

## 2. Literature Review

### 2.1 Corporate Governance

Following the financial crisis 2008, the code of corporate governance attains much attention, as weak corporate governance can lead to more risk-taking (Love and Rachinsky, 2015), and weak governance is pointed as a reason to cause this great crisis (De Haan and Vlahu, 2016). Although micro and macroeconomic negative effects are generally associated with the banking crisis (Dubiel-Teleszynski et al., 2019), the plausibility of possible failure can be identified with sound corporate governance as proved by Berger et al. (2012) concerning the ownership structure of banks. Considering the importance of corporate governance, De Nicolò et al. (2008) consider the improvements in corporate governance by devising an index for composite corporate governance quality. They find that the quality of corporate governance has improved in approximately all countries in terms of a large set of countries they select. This is due to the rise in financial development which persists as one of the reasons.

### 2.2 Corporate Governance and Risk Management

After the financial crisis of 2008, banks and financial institutions pay greater attention to sound corporate governance. Besides this, there is stress to have adequate capital that promotes the smooth running of banks (Chakroun and Abid, 2016). As much as capital is essential for the banks, having sufficient liquidity is also imperative to meet short term obligations (Demiroglu and James, 2011). Income smoothing which is referred to as earnings management is an influential factor posing a substantial relationship with corporate governance, for sound corporate

governance mechanism must minimize window-dressing through income smoothing. Not ignoring, income smoothing can be performed using various instruments such as provisions, prepayments, accruals, or even derivatives. According to Anandarajan et al. (2007), it is not beneficial for a bank to decrease its loan loss provision to increase earnings, as it eventually decreases the capital adequacy of the bank. Ahn and Choi (2009) examine the relationship between earnings management of borrowing firms and bank monitoring. They find a negative association and conclude that bank monitoring plays a vital role in restricting earnings management for a firm with a bank loan. However, Cornett et al. (2009) suggest that some corporate governance factors restrict the income smoothing, while others induce it.

**2.3 Corporate Governance and Capital Adequacy Ratio**

Fu et al. (2015) examine the impact of the imposition of the 2004 capital regulatory regime in China and discovered that it has varied impacts according to types of banks. Overall, they find that the existing regulatory system results in a rise in the capital of banks, but its effectiveness being dependent upon the type of bank, listed or non-listed. Zheng and Moudud-ul-huq (2017) also study the capital regulation and risk-taking behavior in terms of 32 commercial banks in Bangladesh, applying the GMM technique on the unbalanced panel data for the period 2000 to 2014. They use capital adequacy ratio as a dependent variable and conclude that following capital regulation motivates a bank to decrease its credit risk. They further propose that capital ratios of commercial banks are not to be compromised, since they act as a buffer against the financial crisis. Tanveer et al. (2010) use the capital adequacy ratio as one of the indicators of bank riskiness to study the impact of ownership concentration on capital adequacy ratio and impaired loans. This study is in terms of 500 commercial banks of more than 50 countries for the period 2005 to 2007, which concludes a positive relationship between ownership concentration and capital adequacy ratio, but depending on shareholder's protection.

### 2.4 Corporate Governance and Profitability

Ararat et al. (2017) investigate the impact of corporate governance on firm value and profitability in terms of Turkish public firms using panel data from the period 2006 to 2012 to assess the random effect and fixed effect. Using the Turkey corporate governance index which they formed, they find that it predicts high firm value and profitability using firm random effect. Overall, they find strong reciprocity between governance and firm market value in terms of Turkish listed firms. Rostami et al. (2016) conducted a study in terms of corporate governance and performance evaluation criteria, which they measured by return on assets and stock return, using data of all companies listed on the Tehran stock exchange for the period 2006 to 2012, using the GLS technique. They find a positive relationship between corporate governance variables (ownership, the independence of the board, CEO duality, and CEO tenure) and return on assets. And negative relation between other corporate governance variables (institutional ownership and size of the board) and return on assets. Rahim et al. (2015) used risk governance as a mediating variable between risk management and bank performance; and corporate governance and bank performance. They used a multivariate technique for analysis via structural equation modeling. Although corporate governance and company or bank performance are widely researched topics among scholars, Azim (2012) implements structural equation modeling to evaluate the effect of a different monitoring mechanism on the company's performance to conclude the presence of substitution and complementary association with monitoring mechanisms.

### 2.5 Corporate Governance and Income Smoothing

Vasilakopoulos et al. (2018) examine corporate governance and income smoothing behavior of 98 banks in 23 European Union countries, for the period 2010 to 2013 using a multivariate regression technique. They use loan loss provision as a proxy for income smoothing and find the existence of income smoothing behavior indicated by the pattern of provisions. Furthermore, they find that banks that do not reveal CEO

remuneration may engage more in income smoothing, and banks with greater regulatory capital may use accounting accruals for income smoothing. Similarly, Osma et al. (2019) also use loan loss impairments to measure income smoothing using a sample of 125 listed commercial banks of 14 countries of the European Union, for the period 2000 to 2013. They examine, how the income smoothing behavior of commercial banks is influence by the prudential supervisors; and find those supervisors who are independent of political and industry influence act as noteworthy determinants for income smoothing. Moreover, they find financial transparency being positively influenced by prudential supervisors being independent, which is also a preferable governance feature. In terms of Pakistan, the Structural Equation Modeling-Partial Least Squares technique is implemented to identify the effect of corporate governance on earnings management using the sample of Karachi stock exchange-listed companies (Akhtar et al., 2017). Authors conclude that there can be better earnings management with corporate governance; and before the revision of the corporate governance code in 2012, managers were taking personal benefit using earnings management, which reduced after revision.

**2.6 Corporate Governance and Non-Performing Loans**

Tarchouna et al. (2017) conduct a study investigating the impact of corporate governance on non-performing loans (NPL) of 184 commercial banks in the US, using panel data for the period 2000 to 2013 with the GMM technique. To incorporate corporate governance variables, an index using principal component analysis was calculated. They find that sound corporate governance is successful in reducing non-performing loans for smaller banks. However, in terms of medium and large banks, sound corporate governance failed to protect from excessive risk-taking, eventually causing a rise in credit risk due to deteriorating loan quality and leading to heavy losses, similar to during the global financial crisis period. Chaibi and Ftiti (2015) study the determinants of non-performing loans of commercial banks of France and Germany using macroeconomic and bank-based variables. They find that GDP growth, interest, exchange,

and unemployment rate are macroeconomic factors, whereas size and profitability are bank-specific factors having a significant impact in terms of both economies. Filip (2015) states that the quality of bank loans from the total loan portfolio is represented by the non-performing loans present; the non-performing loan is the altered relationship of credit that harms the creditor's banks and the overall economy as well. Love and Rachinsky (2015) take non-performing loans as a proxy for measuring the performance of the banks of Russia. They expected lower non-performing loans for the banks with sound corporate governance. We use non-performing loans as a proxy for measuring the credit quality of commercial banks of Pakistan. Credit quality determines the credit risk that follows lending because non-performing loans eventually increase the credit risk. Moreover, bank failure can also be predicted using non-performing loans (Berger et al., 2012).

### 2.7 Research Gap

Due to the indecisive nature of literature that exists relating to corporate governance and the determinants used in this study, it is worth noticing the individual as well as the moderated effect by income smoothing and credit quality. According to previous literature, loan loss provision (LLP) is used as an instrument for earnings management (Anandarajan et al., 2007) and is a risk management variable in our study. Also, earnings management may adversely affect the capital adequacy ratio, which is included as a regulatory capital variable because of a requirement to maintain capital adequacy for commercial banks.

## 3. Hypotheses Development and Empirical Equations

### 3.1 Corporate Governance Affects Risk Management

Gontarek and Belghitar (2018) study the consequence of risk appetite on performance and risk-taking using a sample of 140 US bank holding companies from 2012 to 2015. Among their identified association of board-level risk appetite practices with performance and tail risk, they also evidence a positive relationship between the board of directors' meetings and loan loss provisions. In our study, the impact of board

meetings is also evaluated in terms of loan loss provisions therefore a positive association is expected.

Gulamhussen and Santa (2015) assessed the impact of women on banks' boards using a sample of 461 large banks from OECD countries. They find that presence of female board members has a positive influence on profitability, whereas negative influence on risk-taking, with the positive relation between board size and loan loss provisions.

Lipton and Lorsch (1992) asserted for a board with a large number of members, about the difficulty to voice opinion in a limited time of board meeting, which results in inefficient decisions making by the board, in contrast to a smaller board, where directors would know each other and will take decisions after mutual consensus and effective discussion. Therefore, it seems that a smaller board is efficient towards risk management and board size should have a negative connection with loan loss provisions.

Mak and Li (2001) study the relationship between corporate ownership and board structure of Singapore listed firms and find a significant relationship between them. They also recommended that managerial ownership (MNO) tend to align the principal-agent interests because, with the rise in managerial ownership, decisions will be more likely consistent with the maximization of shareholders' wealth, hence minimizing agency problems. Furthermore, this should also lead to better risk management due to the long-term incentive being included. Hence, a positive relationship between managerial ownership and loan loss provisions may be expected.

Bethel and Liebeskind (1993) study ownership structure and corporate restructuring in a sample of 93 firms and find that block holder ownership has a significant relation with corporate restructuring. They also suggest that block holder owners tend to support those corporate investment strategies that are risk-reducing in nature. Therefore, block holder ownership seems to compliment risk management, hence, positive relation is expected with loan loss provisions.

Hill and Snell (1988) identify the impact that divergence of managerial and shareholders' interest has on corporate strategy, and firm profitability using a sample of 94 firms. They propose that institutional owners discourage risk-reducing strategies. Similarly, it was proved that institutional ownership (INO) positively influences corporate risk-taking (Wright et al., 1996). In this study negative relation of institutional ownership with risk management is anticipated based on literature that institutional owners promote risk-taking, therefore may cause lower recognition of loan loss provisions.

H1a: Board structure significantly affect risk management, while moderated by income smoothing.

$$LLP = \propto + \beta 1Meet + \beta 2IND + \beta 3BOD + \beta 4EBTP*Meet + \beta 5EBTP*IND + \beta 6EBTP*BOD + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H1b: Ownership structure significantly affect risk management, while moderated by income smoothing.

$$LLP = \propto + \beta 1BHO + \beta 2MNO + \beta 3INO + \beta 4EBTP*BHO + \beta 5EBTP *MNO + \beta 6EBTP*INO + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H1c: Board structure significantly affect risk management, while moderated by credit quality.

$$LLP = \propto + \beta 1Meet + \beta 2IND + \beta 3BOD + \beta 4NPL*Meet + \beta 5NPL*IND + \beta 6NPL*BOD + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H1d: Ownership structure significantly affect risk management, while moderated by credit quality.

$$LLP = \propto + \beta 1BHO + \beta 2MNO + \beta 3INO + \beta 4NPL*BHO + \beta 5NPL*MNO + \beta 6NPL*INO + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

### 3.2 Corporate Governance Affects Regulatory Capital

More board meetings further result in more scrutiny and monitoring by the board which must lead to a sufficient level of capital adequacy ratio. Similarly, more board of directors and independent directors should promote the required capital adequacy ratio.

Duqi and Al-Tamimi (2018) study the impact of the owner's identity on capital adequacy and liquidity requirements of all listed and unlisted banks of the MENA region from 2000 to 2011. They find that ownership of different shareholders can significantly alter the capital adequacy ratio. Similarly, block holder ownership can have a significant positive impact on the capital adequacy ratio, because they provide an effective monitoring mechanism (Shleifer and Vishny, 1986). On the other hand, institutional ownership may act likewise, nonetheless sometimes, it also promotes risk-taking strategies which harms the capital adequacy ratio. In the presence of greater managerial ownership, there are chances of sufficient regulatory capital due to aligned monetary interest, whereas lesser managerial ownership may lead to more risk-taking strategies by managers to earn greater returns and performance-based incentives.

H2a: Board structure significantly affect regulatory capital, while moderated by income smoothing.

$$CAR = \propto + \beta 1Meet + \beta 2IND + \beta 3BOD + \beta 4EBTP*Meet + \beta 5EBTP*IND + \beta 6EBTP*BOD + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H2b: Ownership structure significantly affect regulatory capital, while moderated by income smoothing.

$$CAR = \propto + \beta 1BHO + \beta 2MNO + \beta 3INO + \beta 4EBTP*BHO + \beta 5EBTP*MNO + \beta 6EBTP*INO + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H2c: Board structure significantly affect regulatory capital, while moderated by credit quality.

$$CAR = \propto + \beta 1Meet + \beta 2IND + \beta 3BOD + \beta 4NPL*Meet + \beta 5NPL*IND + \beta 6NPL*BOD + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H2d: Ownership structure significantly affect regulatory capital, while moderated by credit quality.

$$CAR = \propto + \beta 1BHO + \beta 2MNO + \beta 3INO + \beta 4NPL*BHO + \beta 5NPL*MNO + \beta 6NPL*INO + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

### 3.3 Corporate Governance Affects Profitability

The consequence of board characteristics on bank performance and bank asset quality is evaluated by Liang et al. (2013) using panel data from the sample of 50 large banks in China for the period 2003 to 2010. The board structure is measured using the size, composition, and functioning of the board. They find that board size had a significant negative impact on performance and loan quality, while board meetings and independent directors have a significant positive impact on bank performance and asset quality. Likewise, the positive relation of board meetings and independent directors with return on asset is expected in our study.

In terms of board size, we expect to note a positive or negative relationship with return on assets (ROA). There is mixed literature related to the impact of board size on the performance, as board efficiency may decrease with the rise in board size (see Hermalin and Weisback, 2003; De Haan and Vlahu, 2016) which eventually affects the performance of bank negatively. On the other hand, board size can also have a positive impact on performance (De Haan and Vlahu, 2016), having more think tanks that can improve decision making.

Randøy and Goel (2003) find a positive impact of block holder ownership on firm value and performance in a study, using a sample of 68 SMEs, publicly traded in Norway. They also propose that block holder ownership can reduce agency costs by providing monitoring towards significant decisions of non-founder firms. Similarly, in this study, we expect the positive impact of block holder, managerial, and institutional ownership on profitability.

H3a: Board structure significantly affect profitability, while moderated by income smoothing.

$$ROA = \propto + \beta 1Meet + \beta 2IND + \beta 3BOD + \beta 4EBTP*Meet + \beta 5EBTP*IND + \beta 6EBTP*BOD + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H3b: Ownership structure significantly affect profitability, while moderated by income smoothing.

$$ROA = \propto + \beta 1BHO + \beta 2MNO + \beta 3INO + \beta 4EBTP*BHO + \beta 5EBTP*MNO + \beta 6EBTP*INO + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H3c: Board structure significantly affect profitability, while moderated by credit quality.

$$ROA = \propto + \beta 1Meet + \beta 2IND + \beta 3BOD + \beta 4NPL*Meet + \beta 5NPL*IND + \beta 6NPL*BOD + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

H3d: Ownership structure significantly affect profitability, while moderated by credit quality.

$$ROA = \propto + \beta 1BHO + \beta 2MNO + \beta 3INO + \beta 4NPL*BHO + \beta 5NPL*MNO + \beta 6NPL*INO + \sum x1BA + \sum x2DE + \sum x3SIZE + \sum x3CR + \varepsilon$$

## 4. Methodology

### 4.1 Sample and Data

This empirical study tests the impact of ownership and board structure on monitoring effectiveness, considering the moderating effect of income smoothing and credit quality, in terms of commercial banks of Pakistan, for the period 2007 to 2017. The aim to select a complete sample of commercial banks in Pakistan including both conventional and Islamic banks was not possible due to the availability of data for the selected time frame, so the sample ended up to 18 commercial banks including conventional and Islamic. One of the sample selection criteria is that banks being involved in consumer loans and should have loan loss provisions and the capital adequacy ratio.

Descriptive statistics are used to summarize the variables, the Pearson coefficient of correlation is employed to demonstrate a meaningful association between variables, and the pooled regression technique is applied to estimate results.

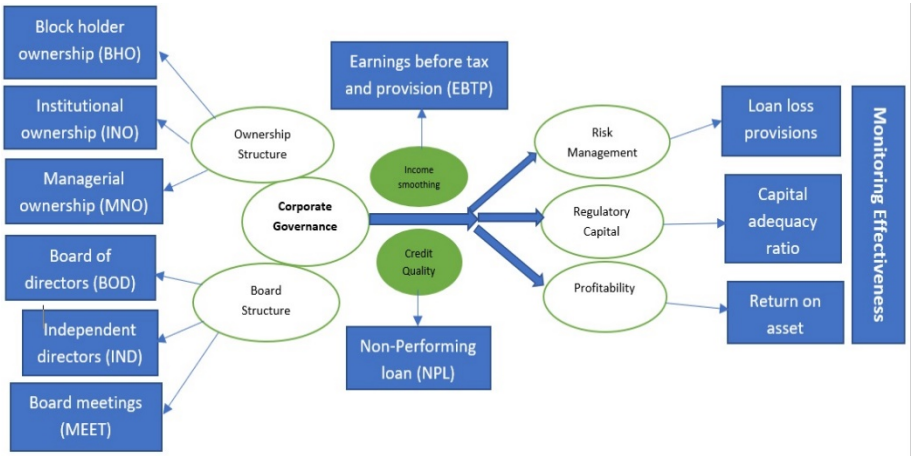


**Figure 1.** Conceptual Framework
**Source:** Research finding.

## 4.2 Variable Description

Table 2 shows a detailed description of all variables.

### 4.2.1 Corporate Governance

Corporate governance is estimated using board and ownership structure variables. For board structure: board meetings, independent directors, and the size of the board of directors are considered; whereas, for ownership structure: institutional, managerial, and block holder ownership are contemplated. These are estimated individually and combined with income smoothing or credit quality for moderating impression towards risk management, regulatory capital, and profitability as shown in Figure 1.

### 4.2.2 Dependent Variables

Risk management, regulatory capital, and profitability are dependent variables of this study to evaluate monitoring effectiveness. To capture the effect of corporate governance structures on dependent variables, board and ownership structures are individually evaluated. Risk management is measured using loan loss provisions (Rahim et al., 2015), since it acts as a buffer to account for credit risk and is a good estimate for risk management. Regulatory capital requirement as per Basel accord

is assessed using the capital adequacy ratio, which has a strict requirement to be incorporated by the financial institutions, and profitability is measured through return on asset (ROA) - a well-known estimate widely used by scholars.

### 4.2.3 Moderating Variables

There are two moderating variables in this study income smoothing and credit quality. Earnings before tax and provision (EBTP) is used as a proxy for income smoothing (Ozili, 2017) and non-performing loans (NPL) are used to account for credit quality, following the study of Liang et al. (2013). These moderating variables are introduced with corporate governance board and ownership structures individually in terms of risk management, regulatory capital, and profitability.

### 4.2.4 Control Variables

Bank age (BA), debt to equity ratio (DE), Bank size (SIZE), and credit risk (CR) are the control variables. All four control variables are introduced in each model. A greater number of years since the establishment of the bank and a high level of leverage can impact risk management, regulatory capital, and profitability. Similarly, the size of the assets of the bank and the individual credit risk faced can also have an impact on the dependent variables.

**Table 2.** Variable Description

| S. No. | Variable | Type | Proxy | Description |
|---|---|---|---|---|
| 1 | Risk management | Dependent | Loan loss provisions (LLP) | Ratio of loan loss provisions to gross loans. |
| 2 | Regulatory capital | Dependent | Capital adequacy ratio (CAR) | Total equity as a percentage of total risk weighted asset. |
| 3 | Profitability | Dependent | Return on assets (ROA) | Net earnings as a percentage of total assets. |
| 4 | Board structure | Independent | Board meetings (MEET) | Total board of director meetings held in a year. |
| 5 | Board structure | Independent | Independent directors (IND) | Total number of independent directors on board. |
| 6 | Board structure | Independent | Board of directors (BOD) | Total number of directors on board. |
| 7 | Ownership structure | Independent | Block holder ownership (BHO) | Total percentage of owners holding more than 10% of share. |
| 8 | Ownership structure | Independent | Managerial ownership (MNO) | Total percentage of ownership held by managers. |
| 9 | Ownership structure | Independent | Institutional ownership (INO) | Total % of ownership held by institutions. |
| 10 | Income smoothing | Independent -Moderating | Earning before tax and provision (EBTP) | Net earnings after adding tax and provisions recognized during the year. |
| 11 | Credit quality | Independent -Moderating | Non-performing loan (NPL) | Loan that has been or will be defaulted. |
| 12 | Age | Independent -Control | Bank age (BA) | Number of years since the establishment of bank. |
| 13 | Debt | Independent -Control | Debt to equity ratio (DE) | Long term debt to total equity. |

| S. No. | Variable | Type | Proxy | Description |
|---|---|---|---|---|
| 14 | Size | Independent -Control | Bank size (BS) | Log of total assets of bank. |
| 15 | Risk | Independent -Control | Credit risk (CR) | Capital requirement of credit risk recognized by bank. |

**Source:** Research finding.

## 5. Results

**Table 3.** Descriptive statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Loan loss provisions | 198 | 0.0035771 | 0.0037945 | 0.000018 | 0.019221 |
| Capital adequacy ratio | 198 | 0.1356711 | 0.0757912 | -0.0542536 | 0.4823985 |
| Return on assets | 198 | 0.0075098 | 0.0142629 | -0.0566693 | 0.0398199 |
| Board meetings | 198 | 6.693378 | 2.457695 | 4 | 17 |
| Independent directors | 198 | 2.880684 | 1.039797 | 1 | 7 |
| Board of directors | 198 | 8.609848 | 1.723445 | 5 | 13 |
| Block holder ownership | 198 | 0.6038781 | 0.2325076 | 0.1008 | 0.9899 |
| Managerial ownership | 198 | 0.0654194 | 0.116694 | 0.0000001 | 0.674121 |
| Institutional ownership | 198 | 0.7403441 | 0.201731 | 0.1583 | 0.99239 |
| Earnings before tax and provision | 198 | 12,200,000,000 | 13,900,000,000 | -4,250,000,000 | 64,800,000,000 |
| Non-performing loans | 198 | 1,860,000,000 | 2,770,000,000 | 899,000 | 15,300,000,000 |
| Bank age | 198 | 34.33333 | 34.88764 | 0 | 154 |
| Debt to equity | 198 | 1.990437 | 6.235489 | -7.129096 | 76.62747 |
| Bank size | 198 | 26.4933 | 1.067717 | 23.37295 | 28.61837 |
| Credit risk | 198 | 26,100,000,000 | 47,100,000,000 | 629,000,000 | 478,000,000,000 |

**Source:** Research finding.

The results of the descriptive statistics reported in Table 3 shows a summary of figures related to variables. Having three dependent variables, the mean LLP as a ratio of gross loans related to Pakistan banks is 0.36%, 0.0018% is the minimum value and 1.92% is the maximum. The mean capital adequacy ratio is 13.6% with a minimum of -5.4% due to negative retained earnings of some Pakistani banks, which are also included in the capital and 48.2% maximum capital adequacy ratio. The mean value of the third dependent variable, return on asset is 0.75% having a minimum of -5.7% and a maximum of 3.99%.

**Table 4.** Pearson Correlation

| | **Loan loss provisions** | **Capital adequacy ratio** | **Return on assets** | **Board meetings** | **Independent directors** | **Board of directors** | **Blockholder ownership** | **Managerial ownership** | **Institutional ownership** | **Earnings before tax and provision** | **Nonperforming loans** | **Bank age** | **Debt to equity** | **Bank size** | **Credit risk** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Loan loss provisions** | 1 | | | | | | | | | | | | | | |
| **Capital adequacy ratio** | -0.0319 | 1 | | | | | | | | | | | | | |
| **Return on assets** | 0.2400* | 0.2753* | 1 | | | | | | | | | | | | |
| **Board meetings** | 0.2728* | -0.1236 | -0.1966* | 1 | | | | | | | | | | | |
| **Independent directors** | 0.1405* | 0.0306 | 0.1205 | 0.0517 | 1 | | | | | | | | | | |
| **Board of directors** | -0.0225 | -0.1974* | 0.1865* | -0.2072* | 0.1684* | 1 | | | | | | | | | |
| **Blockholder ownership** | 0.0708 | 0.2254* | 0.0434 | 0.2008* | 0.1925* | -0.084 | 1 | | | | | | | | |
| **Managerial ownership** | -0.1566* | 0.0189 | 0.1412* | -0.1041 | -0.1391 | 0.0568 | -0.5160* | 1 | | | | | | | |
| **Institutional ownership** | 0.0943 | 0.1999* | 0.0465 | 0.1222 | 0.2000* | -0.1267 | 0.8549* | -0.6714* | 1 | | | | | | |
| **Earnings before tax and provision** | 0.6176* | 0.1494* | 0.5402* | 0.2049* | 0.1313 | 0.063 | 0.2173* | 0.0387 | 0.1696* | 1 | | | | | |
| **Nonperforming loans** | 0.4169* | 0.0165 | 0.2175* | 0.0893 | 0.1112 | -0.0414 | 0.1972* | -0.0529 | 0.1700* | 0.5268* | 1 | | | | |
| **Bank age** | 0.3349* | 0.3260* | 0.4116* | 0.1182 | 0.952 | -0.1125 | 0.4877* | -0.0979 | 0.3673* | 0.5718* | 0.3822* | 1 | | | |
| **Debt to equity** | -0.0876 | -0.2062* | -0.2644* | 0.1454* | -0.087 | -0.0219 | 0.0019 | -0.0405 | 0.0195 | -0.2186 | -0.0917 | 0.1158 | 1 | | |
| **Bank size** | 0.5818* | -0.2023* | 0.5095* | 0.1822* | 0.0941 | 0.1776* | 0.0215 | 0.0462 | 0.0431 | 0.7878* | 0.4480* | 0.5048* | -0.0839 | 1 | |
| **Credit risk** | | | | | | | | | | | | | | | |

| | Loan loss provisions | Capital adequacy ratio | Return on assets | Board meetings | Independent directors | Board of directors | Blockholder ownership | Managerial ownership | Institutional ownership | Earnings before tax and provision | Nonperforming loans | Bank age | Debt to equity | Bank size | Credit risk |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Credit risk** | 0.1915* | -0.0688 | 0.1749* | 0.0974 | 0.306 | 0.1412* | 0.0481 | 0.2046* | -0.035 | 0.3126* | 0.1529* | 0.1694* | -0.0387 | 0.3238* | 1 |

**Source:** Research finding.

The results of the Pearson correlation are reported in table 4. Board meetings have a weak positive correlation with earnings before tax and provisions. More active boards are found to have greater meetings (see Liang et al., 2013) that result in quick decision making and a favorable impact on earnings before tax and provision.

Block holder ownership has a weak positive correlation with non-performing loans and earnings before tax and provisions. Block holder owners promote risk-taking activities (see Bethel and Liebeskind, 1993) that result in maximization of earnings, while also increasing the riskiness through non-performing loans.

Institutional ownership poses a weak positive correlation in terms of non-performing loans and earnings before tax and provisions. Although institutional owners bring diverse knowledge, they are not always effective monitors (Aebi et al., 2012). Due to this, despite the positive impact on earnings, they may not be able to detect risky loans.

LLP and EBTP also have a strong positive correlation. This relation indicates the existence of income smoothing behavior within the commercial banks, as managers aim to recognize larger provisions at times of greater earnings to reflect a smooth trend of earnings; and vice versa at times of decreasing profits for the sake of their earnings-based compensation.

**Table 5.** Risk Management Model with Board Structure (Pooled Regression)

| **LLP** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| MEET | -0.0001318 | -0.81 | 0.418 |
| IND | -0.0001116 | -0.28 | 0.781 |
| BOD | 0.0004708 | 1.78 | 0.076* |
| EBTP-MEET | -0.0064027 | -0.9 | 0.370 |

| **LLP** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| EBTP-IND | 0.0325337 | 1.94 | 0.054* |
| EBTP-BOD | -0.0073136 | -1.18 | 0.241 |
| BA | 0.0000143 | 1.44 | 0.151 |
| DE | -0.0000801 | -1.59 | 0.113 |
| BS | 0.0004574 | 1.39 | 0.165 |
| CR | 0.0015426 | 0.77 | 0.443 |
| R-squared | 0.1301 | Adj R-squared | 0.0836 |

**Source:** Research finding.

In Table 5, it is noted that independent directors have a positive relationship with loan loss provisions, being significantly moderated by earnings before tax and provisions. These results are in contrast to Cornett et al. (2009) that a higher level of LLP is linked with independent directors. Since their reputation is attached to their managerial monitoring, they act diligently (Fama and Jensen, 1983). Also, independent directors contribute usefully toward the monitoring of management. The sound involvement of independent directors on board is considered well from the CG perspective (Adams and Mehran, 2012) because they act as a positive monitor towards the risk management process. That is the reason, from the shareholders' point of view, boards that have more independent directors are considered more effective because they also discourage opportunistic behavior by managers (De Haan and Vlahu, 2016).

It seems that a larger board acts as a positive constituent towards risk management. Although in the above results there is a positive relationship of board size with loan loss provisions, the significant moderation by earning before tax and provision within their relationship is not apparent. This suggests that a larger board means more expertise and diverse knowledge if directors have also taken outside directorship. Therefore, a larger board size may result in more loan loss provisions, which anticipates better risk management and is in contrast to our results but excluding the moderation effect. Similarly, in research by Gulamhussen and Santa (2015), LLP is used as a risk-taking dependent variable and they find a positive relation between board size and loan loss provision. Since the larger board can be an effective monitor, it may result in efficient risk management and greater loan loss provisions.

However, there is no hard and fast rule related to the size of the board because smaller boards are sometimes more efficient (De Haan and Vlahu, 2016) as compared to the larger board, due to no free-rider problems, which sometimes exist.

Based on the results of the first model, only one board structure variable is moderated by income smoothing in terms of risk management. Thus, H1a is rejected based on weak moderation.

**Table 6.** Risk Management Model with Ownership Structure (Pooled Regression)

| **LLP** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| BHO | -0.0012656 | -0.33 | 0.740 |
| MNO | -0.0066356 | -1.03 | 0.306 |
| INO | -0.0069342 | -1.63 | 0.104 |
| EBTP-BHO | -0.0697837 | -0.44 | 0.663 |
| EBTP-MNO | -0.1887117 | -0.92 | 0.357 |
| EBTP-INO | 0.1232449 | 0.87 | 0.388 |
| BA | 0.0000186 | 1.56 | 0.121 |
| DE | -0.0000208 | -0.45 | 0.653 |
| BS | 0.0001555 | 0.47 | 0.636 |
| CR | -0.0006289 | -0.32 | 0.753 |
| R-squared | 0.1526 | Adj R-squared | 0.1073 |

**Source:** Research finding.

With income smoothing as a moderating factor in table 6, ownership structure does not have a significant relationship in terms of risk management. Thus, we are unable to prove H1b that ownership structure significantly affects risk management, while being moderated by income smoothing.

**Table 7.** Risk Management Model with Board Structure (Pooled Regression)

| **LLP** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| MEET | -0.0004641 | -3.46 | 0.001*** |
| IND | 0.0009929 | 2.86 | 0.005*** |
| BOD | 0.0005519 | 3.07 | 0.002*** |
| NPL-MEET | 0.0507314 | 3.52 | 0.001*** |
| NPL-IND | -0.0423649 | -1.76 | 0.080* |
| NPL-BOD | -0.0304859 | -3.17 | 0.002*** |
| BA | 0.000023 | 2.52 | 0.013** |
| DE | -0.0000303 | -0.73 | 0.469 |
| BS | 0.0002874 | 0.94 | 0.351 |
| CR | 0.0026419 | 1.28 | 0.202 |
| R-squared | 0.1795 | Adj R-squared | 0.1356 |

Source: Research finding.

Table 7 shows the impact of board structure on risk management, being moderated by credit quality. Board is considered more active if it has a greater number of meetings and this also improves the supervision by the top management (Liang et al., 2013). Gontarek and Belghitar (2018) also find a positive relationship between the board of director meetings and loan loss provisions. Therefore, more board meetings should lead to more loan loss provisions being recognized. Likewise, the positive relation of board meetings with LLP is noted, while being moderated by NPL.

With NPL as a moderating factor, the relationship of independent directors with loan loss provisions indicates that independent directors not possessing the relevant expertise required to efficiently oversee the board. Though they bring outside knowledge, it is not usually relevant to the banking sector, hence causing a negative impact. Further, as it has also been argued that independent directors are not always beneficial, for they may lack the skills required to efficiently oversee a complex banking system and may not be able to take related measures in terms of non-performing loans.

Having board characteristics variables being significant, hypothesis 1c is accepted that board structure having a significant influence on risk management, with strong moderation by credit quality.

**Table 8.** Risk Management Model with Ownership Structure (Pooled Regression)

| **LLP** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| BHO | -0.0052814 | -1.93 | 0.055* |
| MNO | -0.0098802 | -3.17 | 0.002*** |
| INO | -0.0026886 | -0.81 | 0.417 |
| NPL-BHO | 0.4953229 | 2.01 | 0.046** |
| NPL-MNO | -0.3659802 | -1.42 | 0.156 |
| NPL-INO | -0.4135536 | -1.9 | 0.059* |
| BA | 0.0000189 | 1.67 | 0.096* |
| DE | -0.0000613 | -1.48 | 0.140 |
| BS | 0.0004094 | 1.28 | 0.201 |
| CR | -0.0004332 | -0.21 | 0.836 |
| R-squared | 0.1605 | Adj R-squared | 0.1156 |

**Source:** Research finding.

Table 8 shows the impact of ownership structure on risk management, being moderated by credit quality. Without considering the moderating effect block holder ownership harms loan loss provisions because block holder owners are in a state to efficiently use their voting power. They possess good monitoring expertise and are well informed most of the time (De Haan and Vlahu, 2016), therefore, they take greater risks with lax risk management. Similarly, managerial owners, considering their private control benefits, tend to record lower provisions that could increase the profits and their performance-based incentives, thus, negative relation is recorded in terms of loan loss provisions.

A negative relation is visible between MNO and risk management. This suggests that MNO is not always good for risk management practices for commercial banks and as Laeven and Levine (2009) proposed that there is a greater risk when there are large controlling shareholders. When there is higher managerial ownership, there are greater chances of managers being dominating the firm and showing a good position to other shareholders, even by the reinstatement of financial figures (Abdullah et al., 2010) for income smoothing. However, with lower managerial ownership, there is greater pressure on management as their performance will be monitored by majority shareholders. Thus, with a rise in managerial ownership, they may decrease loan loss provisions to show greater profits using their dominated control on provisions recognition.

Since block holder owners have a large stake and incentive to exercise control, it may result in risk-taking activities to maximize gain (Bethel and Liebeskind, 1993) and restrain managers to adopt risk-reducing strategies (Hill and Snell, 1988). While, on the other hand, these investors are also the main contributors to sound internal controls. They are large investors with vast industry exposure, hence play a positive role in effective risk management. Therefore, block holder ownership has a direct relation with risk management, which is in contrast to our results. Also, significant moderation of credit quality within the relationship of block holder ownership and risk management is evidenced in our results.

Having the bank's poor credit quality, a rise in institutional ownership does not seem to improve risk management practices. This is in contrast to a study by Aebi et al. (2012), as they proposed that institutional ownership does not always provide effective monitoring against the risks taken by banks. However, Gontarek and Belghitar (2018) found a positive relationship between institutional shareholders and loan loss provisions because sometimes institutional investors bring a diverse experience, which results in better provisions recognition and is a positive risk management practice.

Since two out of three ownership characteristics variables are significant, H1d is accepted that there is modest moderation by credit quality in an association of ownership structure and risk management.

**Table 9.** Regulatory Capital Model with Board Structure (Pooled Regression)

| **CAR** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| MEET | -0.004289 | -1.69 | 0.093* |
| IND | 0.0053543 | 0.83 | 0.405 |
| BOD | -0.0096492 | -2.27 | 0.024** |
| EBTP-MEET | 0.1574579 | 1.38 | 0.169 |
| EBTP-IND | -0.3793573 | -1.43 | 0.155 |
| EBTP-BOD | 0.166918 | 1.69 | 0.092* |
| BA | 0.0008115 | 5.11 | 0.000*** |
| DE | -0.0005077 | -0.63 | 0.528 |
| BS | -0.040803 | -7.91 | 0.000*** |
| CR | -0.1408633 | -4.51 | 0.000*** |
| R-squared | 0.4542 | Adj R-squared | 0.4250 |

**Source:** Research finding.

The estimated results in table 9 did not evidence the moderation of income smoothing within the relationship of board meetings and CAR. However, without a moderating effect board meetings has a negative relation with CAR. It seems that when a bank is going through a prudent phase and is having sufficient CAR maintained, it needs just the routine meetings to keep the board members informed. According to Jensen (1993) boards of firms that are stable and performing their routine tasks demonstrate lesser conflicts and activities. But this is converse at times of crisis when there is a visible threat to shareholders' investment. Thus, more board meetings can be induced as if a business is going through some hard time or a structural change.

The results also show that the moderating role of income smoothing between board size and CAR is significant. There seems to be a direct relation of board size with CAR. Even though larger board size may create the free-rider problem as already discussed (Mehran et al., 2011), it is still considered safer as compared to smaller boards due to the "too big to fail" perception. Therefore, the larger the board size more it influences regulatory decision-making. Thus, a large board size means more knowledge of directors related to regulatory disclosure requirements, which seems an answer to positive relationships.

Hypothesis 2a cannot be accepted due to weak moderation by income smoothing as only one board structure variable is significant in terms of regulatory capital.

**Table 10.** Regulatory Capital Model with Ownership Structure (Pooled Regression)

| CAR | Coef. | T | P>t |
|---|---|---|---|
| BHO | -0.1871561 | -3.040 | 0.003*** |
| MNO | 0.2399568 | 2.300 | 0.023** |
| INO | 0.1859849 | 2.710 | 0.007*** |
| EBTP-BHO | 6.218241 | 2.400 | 0.017** |
| EBTP-MNO | -4.919218 | -1.490 | 0.138 |
| EBTP-INO | -4.248086 | -1.850 | 0.066* |
| BA | 0.0009089 | 4.710 | 0.000*** |
| DE | -0.0012685 | -1.700 | 0.090* |
| BS | -0.0399874 | -7.550 | 0.000*** |
| CR | -0.1345529 | -4.170 | 0.000*** |
| R-squared | 0.4456 | Adj R-squared | 0.4160 |

**Source:** Research finding.

In terms of CAR, results in table 10 show a significant positive impact of block holder ownership and within this relationship, there is significant moderation by earnings before tax and provisions. The positive impact of block holder ownership on CAR is due to the effective monitoring mechanism they can provide (Shleifer and Vishny, 1986) having larger stakes in the business. They also act as effective monitors and may also result in the firing of those managers who fail to maximize shareholders' wealth (Chahine, 2007).

On the other hand, INO has an indirect relation with CAR, with significant moderation of earnings before tax and provisions. The

negative relationship suggests that institutional owners being large investors may use their power to exploit small stakeholders (Stiglitz, 1985; Porta et al., 1999) to divert funds towards risk-taking investment opportunities (Wruck, 1989) for greater returns, hence causing lesser CAR. In a similar setting with more large investors, there are also problems associated with raising finance for the firms, since minority shareholders may be reluctant to invest fearing expropriation by managers and concentrated owners (La Porta et al., 1998).

Having two significant variables representing ownership characteristics, hypothesis 2b can be accepted that ownership structure crucially affects regulatory capital being averagely moderated by income smoothing.

**Table 11.** Regulatory Capital Model with Board Structure (Pooled Regression)

| **CAR** | **Coef.** | **T** | **P>t** |
|---|---|---|---|
| MEET | -0.0067025 | -2.980 | 0.003*** |
| IND | 0.0023475 | 0.400 | 0.687 |
| BOD | -0.001167 | -0.390 | 0.699 |
| NPL-MEET | 0.5419707 | 2.250 | 0.026** |
| NPL-IND | -0.3339714 | -0.830 | 0.408 |
| NPL-BOD | -0.3618985 | -2.240 | 0.026** |
| BA | 0.0011086 | 7.250 | 0.000*** |
| DE | -0.0018252 | -2.610 | 0.010** |
| BS | -0.0344107 | -6.680 | 0.000*** |
| CR | -0.1381496 | -4.000 | 0.000*** |
| R-squared | 0.4222 | Adj R-squared | 0.3913 |

**Source:** Research finding.

Table 11 shows the impact of board structure on regulatory capital, being moderated by credit quality. Board meetings show a positive impact on CAR with significant moderation of non-performing loans. This shows, board meetings having a direct relationship with the regulatory capital requirement, as more board meetings result in more checks and control by the directors. Also, sufficient regulatory capital provides stability for commercial banks against risks, therefore more board meetings result in direct relation with CAR.

There is notable moderation of non-performing loans within the negative relationship of board size and CAR. This negative relationship

suggests inefficiency that emerges due to a rise in board size, as lesser board size is also considered efficient because of minimizing the free-rider problem. Thus, with the presence of non-performing loans, the board seems to be inefficient which can have an adverse effect on CAR.

Based on two significant board structure variables, hypothesis 2c can be accepted that corporate governance board structure significantly affects regulatory capital, while modestly moderated by credit quality.

**Table 12.** Regulatory Capital Model with Ownership Structure (Pooled Regression)

| CAR | Coef. | T | P>t |
|---|---|---|---|
| BHO | -0.1072942 | -2.350 | 0.020** |
| MNO | 0.1049137 | 2.020 | 0.045** |
| INO | 0.1250151 | 2.270 | 0.024** |
| NPLBHO | 5.145453 | 1.250 | 0.211 |
| NPLMNO | 0.9241816 | 0.220 | 0.829 |
| NPLINO | -4.675434 | -1.290 | 0.198 |
| BA | 0.0011645 | 6.210 | 0.000*** |
| DE | -0.0020973 | -3.050 | 0.003*** |
| BS | -0.039909 | -7.500 | 0.000*** |
| CR | -0.1391145 | -3.990 | 0.000*** |
| R-squared | 0.4162 | Adj R-squared | 0.3850 |

**Source:** Research finding.

The moderating role of non-performing loans between ownership structure and regulatory capital is insignificant, yet the individual effect is significant (Table 12). Blockholder ownership has a significant negative relation with CAR. Blockholder owners have larger stakes due to which they are more in the position to influence the decision making towards risk-taking activities (Bethel and Liebeskind, 1993), which may reduce funds for CAR.

Conversely, managerial ownership posing a notable direct impact on CAR. Managerial ownership provides long term incentives to managers with their short-term performance-based incentives. This leads to more consideration of CAR which is a buffer towards adverse future movements.

Institutional ownership also has a significant positive relation with regulatory capital. Since larger institutions bring wide exposure and

knowledge related to business, they promote sufficient CAR to account for the risk faced by the bank

Ownership structure does not affect regulatory capital, while moderated by credit quality, therefore hypothesis 2d cannot be accepted.

**Table 13.** Profitability Model with Board Structure (Pooled Regression)

| **ROA** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| MEET | -0.0015273 | -4.27 | 0.000*** |
| IND | 0.0011662 | 1.29 | 0.199 |
| BOD | -0.0013879 | -2.32 | 0.021** |
| EBTP-MEET | 0.0411485 | 2.56 | 0.011** |
| EBTP-IND | -0.0264039 | -0.71 | 0.481 |
| EBTP-BOD | 0.0484745 | 3.49 | 0.001*** |
| BA | -0.0000251 | -1.12 | 0.263 |
| DE | 0.0001463 | 1.29 | 0.197 |
| BS | 0.0025689 | 3.53 | 0.001*** |
| CR | -0.0030718 | -0.7 | 0.486 |
| R-squared | 0.6939 | Adj R-squared | 0.6776 |

**Source:** Research finding.

There is a significant moderating effect of earnings before tax and provisions between board meetings and ROA in table 13. In contrast with the literature, more board meetings suggest, the board of directors being more active (Liang et al., 2013), therefore a more active board results in greater profitability.

Board size is evidenced to have a crucial direct impact on ROA with significant moderation by earnings before tax and provisions. The positive impact of board size on ROA is in contrast to a study by De Haan and Vlahu (2016) that board size can have a direct relationship with performance.

Two board structure variables significantly affect profitability, while moderated by income smoothing, therefore hypothesis 3a is accepted based on average moderation.

**Table 14.** Profitability Model with Ownership Structure (Pooled Regression)

| **ROA** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| BHO | -0.0128086 | -1.42 | 0.157 |
| MNO | 0.0193558 | 1.27 | 0.207 |
| INO | -0.0028185 | -0.28 | 0.779 |
| EBTP-BHO | 0.4587815 | 1.21 | 0.227 |
| EBTP-MNO | -0.22898 | -0.47 | 0.636 |
| EBTP-INO | 0.4668523 | 1.39 | 0.167 |

| ROA | Coef. | t | P>t |
|---|---|---|---|
| BA | -0.0000551 | -1.95 | 0.052* |
| DE | 0.0001561 | 1.43 | 0.154 |
| BS | 0.0021825 | 2.82 | 0.005*** |
| CR | -0.0052708 | -1.12 | 0.265 |
| R-squared | 0.6648 | Adj R-squared | 0.6468 |

**Source:** Research finding.

The moderating effect of earnings before tax and provisions with the ownership structure and return on assets is statistically insignificant in Table 14. However, bank size shows crucial direct relation with ROA, suggesting that with the rise in asset size of the commercial bank it can increase its profitability by allocating funds towards investing opportunities.

Based on the above results, hypothesis 3b is not accepted because ownership structure does not affect profitability, while moderated by income smoothing.

**Table 15.** Profitability Model with Board Structure (Pooled Regression)

| ROA | Coef. | t | P>t |
|---|---|---|---|
| MEET | -0.001812 | -4.390 | 0.000*** |
| IND | 0.0016315 | 1.530 | 0.129 |
| BOD | 0.0006297 | 1.140 | 0.257 |
| NPL-MEET | 0.0361127 | 0.820 | 0.416 |
| NPL-IND | -0.0708803 | -0.960 | 0.339 |
| NPL-BOD | -0.0291255 | -0.980 | 0.326 |
| BA | 0.0000961 | 3.430 | 0.001*** |
| DE | -0.00037 | -2.880 | 0.004*** |
| BS | 0.0046331 | 4.900 | 0.000*** |
| CR | -0.012298 | -1.940 | 0.054* |
| R-squared | 0.4504 | Adj R-squared | 0.4210 |

**Source:** Research finding.

The moderating effect of credit quality with board structure does not have a significant effect on profitability, whereas the individual effect of board meetings has a significant negative impact on profitability (table 15). A rise in board meetings also suggests a time of crisis or danger to shareholder's investment which requires frequent meetings. Since boards of firms that are stable and going through routine activities do not require frequent meetings (Jensen, 1993), more board meetings can have a negative relationship with profitability.

Since board structure does not affect profitability, while moderated by credit quality, thus hypothesis 3c is rejected.

**Table 16.** Profitability Model with Ownership Structure (Pooled Regression)

| **ROA** | **Coef.** | **t** | **P>t** |
|---|---|---|---|
| BHO | -0.0213624 | -2.490 | 0.014** |
| MNO | 0.0223955 | 2.290 | 0.023** |
| INO | 0.028294 | 2.730 | 0.007*** |
| NPLBHO | 2.179192 | 2.820 | 0.005*** |
| NPLMNO | 0.9556907 | 1.190 | 0.237 |
| NPLINO | -2.188411 | -3.210 | 0.002*** |
| BA | 0.0000805 | 2.280 | 0.024** |
| DE | -0.0004821 | -3.720 | 0.000*** |
| BS | 0.0044461 | 4.440 | 0.000*** |
| CR | -0.0102306 | -1.560 | 0.120 |
| R-squared | 0.4158 | Adj R-squared | 0.3846 |

**Source:** Research finding.

Considering Table 16, significant moderation of non-performing loans is noticed within the relation of block holder ownership and return on assets. Blockholder owners are large investors possessing vast exposure due to which they can provide effective monitoring (Shleifer and Vishny, 1986). They are more in a position to get their decisions implemented because of voting power and being well informed with the information (De Haan and Vlahu, 2016). Moreover, block holder owners are normally concerned with the maximization of shareholders' wealth (Chahine, 2007), therefore can have a direct relation with profitability.

It is also evidenced that non-performing loans have significant moderation within the relationship of INO and ROA. The impact of institutional owners is negative since they may exploit minority shareholders, being in majority (Porta et al., 1999) and able to divert funds towards riskier investments (Wruck, 1989), that may turn out to be non-profitable. Also, institutional owners are not always effective monitors against risks (Aebi et al., 2012), causing an adverse effect on profitability.

Hence ownership structure affects profitability, while modestly moderated by credit quality, so hypothesis 3d is accepted.

## 6. Conclusion

### 6.1 Corporate Governance and Risk Management

With no doubt, the results suggest that the moderating role of credit quality does impact the relationship amid corporate governance and risk management. Besides income smoothing, credit quality is a more important moderating factor towards better risk management.

More board meetings with good credit quality are affirmed to be advantageous for better risk management. However, till now, the suitability of more or lesser board meetings still alternates with the operating cycle, the bank is going through. Similarly, independent directors may not always have relevant skills to improve credit quality and risk management process, despite the outside knowledge and diversified expertise they offer. Although suitability of board size matters, there are sometimes inefficiencies connected with larger board size, causing an adverse effect on risk management.

Conversely, large institutional owners may turn out to be excessive risk takers which may deplete the risk management process and credit quality. Therefore, institutional owners may not always provide an effective monitoring mechanism.

### 6.2 Corporate Governance and Regulatory Capital

It is also manifest that block holder owners are beneficial for the maintenance of required regulatory capital, despite income smoothing by management. This intimates the risk-taker attitude of institutional investors directing funds towards investment opportunities, rather than the sustenance of buffer capital.

The study also contends that considering credit quality, more board meetings are good for regulatory capital as they are for risk management. This resonates that more meetings increase activities of the board members, resulting in more chances to fulfill regulatory requirements including capital adequacy ratio. Considering, board size in terms of regulatory capital having credit quality as a moderator, it appears to be efficiently controlled for a free-rider problem that follows with the larger board size.

### 6.3 Corporate Governance and Profitability

A somewhat surprising finding is that board meetings and board size emerged as vital components of board structure. Suggesting that the board remains active with a greater number of meetings, causing better strategic planning and eventually resulting in enhanced profitability. Plus, a larger board size does not always bring inefficiencies and free rider issues, but may also bring more innovative and better ideas to increase profitability.

The study validates that the main objective of block holder owners is the maximization of shareholders' wealth using their strength of vast exposure and being well informed with the information, due to which they are considered good in terms of risk management, regulatory capital, and profitability. Whereas, institutional owners due to excessive risk-taking attitude may harm risk management, regulatory capital, and even profitability.

Overall, it is observed that board meeting and block holder ownership has a positive relation with risk management, regulatory capital, and profitability while being moderated by specific factors. On the other hand, institutional ownership demonstrates a negative relationship with risk management, regulatory capital, and profitability, including the specific moderator.

This study summons extended attention towards important corporate governance factors, such as board meetings, block holder ownership, and institutional ownership that can have a meaningful impression on commercial banks of Pakistan. Also, the corporate governance constituents do not operate in isolation, but are well interrelated, because having sufficient regulatory capital promotes monitoring effectiveness and contributes towards better profitability.

Hence, this study is critical for researchers facing a dearth of erudition in terms of important corporate governance factors that can be moderated by income smoothing and credit quality. Supervisors may prefer a suitable mix of board and ownership structure when implementing system-wide governance to enhance commercial banking operations.

This output also contributes to the contemporary body of knowledge that ascertains the impact of corporate governance on risk management, capital regulation, and firm performance on a standalone basis.

CEOs and board directors may resemble fundamental governance variables with competitor commercial banks to bring improvements on board. Furthermore, policymakers and bank supervisors may also avail from the verdicts of this study that suggest the appropriateness of governance factors to propose betterment for the banking regulations.

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