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IMPACT OF BOARD COMPOSITION ON NON-PERFORMING LOANS: EVIDENCE FROM BANKING SECTOR OF PAKISTAN

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ABSTRACT: *This study is carried out to investigate the nature of relationship between board composition in shape of Board Size (BS) & number of Non-Executive Directors (NED) with Non-Performing Loans of the bank for a sample of 18 major Pakistani banks from 2005 to 2013. The efficient estimator Generalized Method of Moments (GMM) has been used to estimate the impact. The study finds that board composition in shape of board size and number of non-executive directors performs a significant role for bringing down the non-performing loans of the bank and subsequently the credit risk is mitigated. The negative association between BS and NPLs suggest that larger board size devise balanced and credit risk averted policies. The results also suggest that with a greater number of non-executive directors increase the NPLs' of the bank. In Pakistan scenario, the outsiders/NEDs are more concerned to increase short term performance of the bank and take high risks. This factor resultantly increases the credit risks for the bank in the long run.*

Key Words: Non-performing Loans, Board Composition, Credit Risk, Corporate Governance.

1. INTRODUCTION

Saving is the most pivotal factor of the economy and one of the most crucial ingredients for the industrial revolution in the economy. As of today, commercial banks are one of the biggest channels that mobilize the savings in the form of deposits from the general public and provide these funds to those who are interested to install short and long term projects. Commercial Banks are lifeline for potential growth of any economy that ultimately help to achieve a better standard of living in any country [42].

In the last three decades, this world experienced huge financial losses due to poor and fragile internal control systems of the banks. It took almost three decades for commercial banks to cover these losses and streamline their operations. This financial crisis was caused by high financial and operational leverage, insufficient disclosures, fragile stock market structure and long term projects funded through short term deposits [46]. These factors as a whole hit the overall financial system of the world and all the economies faced considerable real time losses [29]. Amongst all the economies, this financial crisis was the worst for developing economies due to several build-in micro & macro level concerns related to education, poverty, unemployment, inflation, unfavourable balance of payments and others.

During the financial meltdown, it is evident that corporate governance failed miserably and overall structure of financial entities/markets needs to be revamped by introducing a standardized set of laws in term of capital adequacy and liquidity requirement of the banks [24]. Al-Jarrah [1] has divided the sources of risks-facing financial institutions into two categories and they are "systematic and non-systematic". The systematic risk factors are something that is beyond a bank's control and capacity and prevails in the overall economy, yet these factors have a strong impact on all financial institutions. But in comparison, the non-systematic factors limited, varying impacts and take place within the controlled environment of the banking system.

Studies have analyzed various aspects and functions of corporate governance which are being elaborated with a special emphasis on the role played by the Board of Directors in banks [39]. According to the definition by the African Development Bank, corporate governance is a framework in which duties and authorities of a corporation are enshrined that deliver profit to investors and other concerned people affected by its processes. The importance of economic power of corporations and society at large has produced so much interest in corporate governance. All firms are created to increase the wealth of its shareholders, these stakeholders entrust their capital to these firms in order to ensure that it will be managed in a better and transparent way and eventually their investment will be multiplied up to their satisfaction. But due to the fact that managers may not be able to meet the desires of their shareholders so that's why the Board of Directors is established to monitor the progress in favor of bank's shareholders [39].

Weak Corporate Governance might be instrumental in bringing down a financial system and increase the risk profile of companies in the corporate sector. This will also make banks and financial institutions greatly liable to loss. It can be further said that such weakness might destroy the capacity of banks to identify and manage their risks and its eventual outcome will be a sharp decline in the quality of lending and financial institutions will soon be forced to indulge in excessive risk-taking. These risks might spread at a wider level affecting every part of the financial system, but it is dependent upon how resilient these financial institutions might be. It may also lead to a poor credit culture, poor management of interest or exchange risk, irregularities in the connected exposures. Some of these risks alone or collectively may lead to financial instability and lack of resources [13].

The board of the directors is a group of people at the helm of affairs in a corporation. Responsibilities of this board are crucial and diverse. The Basel Committee on Banking Supervision (BCBS) has laid greater emphasis on review and improvement of the corporate governance in banks. Board of Directors is responsible for the quality of the corporate governance in any bank. This is the board that has a vital role in policy making and leads the strategic goals. Implementation of these policies enables the institution to achieve its ultimate goals. That's why the study of board composition and its various characteristics is worth reading in improving the corporate governance. This has two major responsibilities, first is making of the policy and second is

risk management for their respective bank. In any bank, out of other policies, a balanced and reliable credit policy may guarantee improved asset quality and in turn earning profit for the bank. Good asset also reduces the risk of bankruptcy, low ratio of Non-Performing Loans (NPLs). Now the main issue is that how the formation of the board of directors will affect response to the NPLs. Non-Performing Loans hinder financial growth of the banking sector as well as the overall progress of an economy. Now our focus must be to analyze the composition/formation of the board, its size, number of Non-Executive Directors (NED), its impact on the bank's assets and NPLs in Pakistani banking sector.

Fama, *et. al.* [21], created a theory that gave the board of the directors the highest slot in internal control mechanism that supervises the top administration level. This theory argues that in case of the outside directors, it is easy to do their monitoring tasks without collusion with top managers to divest stockholders' wealth that's why outside managers add to the board's capacity to effectively check on the top management and this is made possible through the separation of corporate ownership and decision control. Various firms have different representation of outside members in their respective boards of directors [7]. That is why this study is now focused upon examining the variations in the formation of the board of directors to practically check the prediction that outside members are instrumental in reducing financial statement fraud.

Now it is a consensus among theorists that Non-Performing Loans are linked with the failure of banks and financial loss in both developing and developed economies. A relatively simpler definition of non-performing loan is: any loan that is not earning profit or there is no payment of principal and interest as per agreement. In addition to a bank's profit, NPL is also dependent upon a country's overall economic condition. Others [45] suggested that banking business is sensitive because deposits constitute more than 85% of the bank's liability. Credit creation is the bedrock of all banking functions and this function is totally dependent upon the amounts deposited by customers. This activity actually generates revenue, but it also exposed the bank to high risk and in the end to default [34]. Many researchers have found that asset quality is a significant precursor of insolvency [48,6] and there is a high level of non-performing loans in failing banking institutions before they are declared bankrupt.

Basel committee for banking supervision has introduced different stages to absorb financial losses due to NPLs and accordingly banks maintain reserves as per percentage mentioned for each stage of NPL amount. These stages and percentages of provisions are further interpreted by all the central banks of the world as per their requirement. In Pakistan, State Bank of Pakistan defines prudential regulations for all the banks working and according to these prudential regulations all the banks need to main certain reserve for every NPL amount according to category wherein it falls.

In this document our topic is the repercussions of NPLs on microeconomics, especially in the banking sector so the effect of NPLs might be checked practically on the lending attitude of commercial banks.

1.1 Objectives

Following are the main objectives of the study:

1. To examine the impact of board composition on Non-Performing Loans of the banks.
2. To investigate the influence of total assets, asset concentration and GDP growth rate on banks' loans.

2. LITERATURE REVIEW

This part of study explains the existing literature on the topic which has further been classified into two parts. In first segment of this chapter, the relationship of NPLs with the board structure, bank related factors and economic factors have been discussed in view of already published literature while second part of study explains the contribution of present study towards already published literature.

Others [23] have examined the possibility of conflict among the institutional, governance and strategic functions of boards in time of devising policies. The current study has particularly investigated that larger board size and diversity, cast a strong impact on board's ability in taking decisions related to strategic parameters especially at a time of environmental turbulence. The current study suggests board diversity that should be taken into account as a significant constraint in regard to strategic changes.

Another [8] has empirically examined the likelihood that the presence of larger ratio of outside members of board of directors significantly reduces the possibility of financial statement fraud and better policy frameworks. The current study has used the logit regression analysis of 75 frauds and 75 non fraud firms. The results have shown that firms with larger proportion of outside members in board size are non-fraud firms whereas there is no significant relationship or likelihood of financial statement fraud in regard to presence of the audit committee. In addition, it has been found that the occurrence of financial statement fraud decreases as a result of increase in outside directorship and tenure of outside members of the firm.

Workers in [41] have dug into an empirically analysis of non-performing loans of commercial banks in the context of India. The empirical analysis measures the influence of the major sets of economic and financial factors on the non-performing loans. The panel regression model has been regressed and empirical results show that in the presence of risk preferences and macroeconomic shocks which are induced by bank size, the terms of credit variables have significant impact on nonperforming loans. In addition, substitute measures of bank size bring forth derivative impact on bank's non-performing loans. Moreover, it has been analyzed that higher interest rate expectation changes the cost of credit which further persuades increase in NPAs of the bank. Whereas the results have shown that factors like horizon of maturity of credit, improved credit culture, satisfactory macroeconomic and business circumstances decrease the NPAs. Further investigated that business cycle could have different implications on differential response of borrowers and lenders.

Elsewhere [31], they have used dynamic panel data analysis to scrutinize the factors of non-performing loans (NPLs) in the Greek banking sector. This study has used all factors of NPLs' for each loan category i.e. consumer loans, business

loans and mortgages, separately. The analysis of this article is based on the hypothesis that considers macroeconomic and bank-specific variables to be effective for the loan quality that these effects vary between different loan categories. The results depict that, for each loan categories, NPLs in the Greek banking system are described mainly by macroeconomic variables, i.e. GDP, unemployment, interest rates, public debt and management quality. Results have further analyzed that non performing mortgage loans are least responsive to changes in position of macroeconomic indicators whereas other loan categories are significantly quantitative changes in macroeconomic conditions.

Author in [28] have intended to demonstrate the key bank specific and macroeconomic determinants of non-performing loans in the Pakistani banking sector. The fixed and random effect econometric models have been used to investigate the empirical analysis of the time period of 2000-2009 of 12 banks. Bank size (BS), loan growth (LNG), net interest margin (NIM), and deposit to asset ratio (DPA) are used as bank specific factors of non-performing loans in Pakistan. The results have shown that bank is well-organized in monitoring its loans where loan capitalization is at th high side in the market and the loan growth is also mainly backing in bad loans at significant level of 1%. The rise in interest rate is also significant and positively related to non-performing loans. The study has revealed that political Risk Index (PRI) has an enormous impact on NPLs which is significant at 1%. The study has given an emphasis that in Pakistani economy, the political risk is a major stumbling block in increasing the default ratio of the banks and the banks are advised to address such issues before sanctioning their loan portfolio.

Some others [47] have investigated the implication of the board monitoring role on specific loan portfolio quality measures in banks (default rate, recovery rate and provisioning rate) of a totality of Italian-based banks, registered at Borsa Italiana SPA for a time period of 2006-2008. The study has considered a number of accounting proxies to highlight the quality of the loan portfolio of a bank. The outcomes of the analysis illustrated an overall impuissance of the board role (expressed by Independents and Audit Committee on board) in watching loan portfolio quality of the bank, with the subsequent damage of the interests of stakeholders. The results of the multivariate regression model revealed a positive involvement of board monitoring, even if partial, which has further been underlined in two cases. The independents have contributed in increasing recovery rate, while the Audit committee was inclined to augment the provisioning rate in banks. The negative impact of board monitoring has been analyzed on the default rate.

Others [35] have studied to analyze the factors of non-performing loans in 85 banks of Italy, Greece and Spain, have experienced severe financial issues after subprime crisis in 2008, for a sample of 5 years from 2004-2008. The current study has investigated the impact of macroeconomic variables and specific variables to the bank on non-performing loans. The rate of growth of GDP and unemployment are analyzed under the category of macroeconomic variables, whereas real interest rate with respect to specific variables considered for the return on assets, the change in loans and the loan loss reserves to total loans ratio (LLR/TL). The panel data regression analysis has examined that problem loans are negatively associated with the growth rate of GDP, the profitability of banks' assets and positively related to the unemployment rate, the loan loss reserves to total loans and the real interest rate.

Others [38] have studied the impact of corporate governance in decreasing the occurrence of non-performing loans in Nigerian banks. This study has used Board Size (BS), Board Composition (BC), Composition of Audit Committee (CAC) and Power Separation (PS) variables of corporate governance impact on NPLs of Nigerian Deposit money bank. The secondary study was carried out for fourteen (14) banks for a time period of 2005-2011. The multivariate regression analysis revealed that all aforementioned variables did not have any significant influence on non-performing loans therefore the authors have recommended that the central bank of Nigeria should focus to strengthen the rules and principles guiding the approval and monitoring of loans and advances.

[30] have examined a comprehensive set of board characteristics (size, composition and functioning of the board) by using a sample of 50 largest Chinese banks during the period of 2003-2010. The board characteristics' impacts have also been analyzed on the performance and asset quality of the banks' in China. A significant positive impact of board meetings and the proportion of independent directors have been investigated on both bank performance and asset quality. On the other hand, board size impacts significantly negative on bank performance. This study has further revealed that that degree of bank boards' political connection is negatively correlated with bank performance and asset quality. Thus, current research indicates that board of directors plays a significant role in bank governance in China.

Some others [26] have investigated that board of directors takes the responsibility to prepare corporate strategy, estimate managerial performance, deliver strategic guidance, put corporate governance policies in place and resultantly guarantee an adequate return for the shareholders. Eventually, the board was changed into a powerful platform of authority and played a critical role in firm performance. Therefore, the study has examined that dynamic and demographics of board size, i.e. size and structure in corporate governance. The role of board in firm performance has been investigated in banking sector of Pakistan during the period of 2007-2011 by using annual secondary panel data. By using the linear regression technique, te article highlights the impact of different determinants of board size and structure (Number of Directors, Inclusion of Non-Executive Directors, Presence of Women directors, CEO Duality and Number of Board Committees) on firm financial performance. However, the results turned out to be in favor of positive relationship between numbers of directors, inclusion of non-executive directors, presence of women directors, CEO duality and firm financial performance. But it has been revealed that number of board committees undesirably affected the firm financial performance.

[50] scrutinized the association of board composition and operational risk events of financial institutions. The study has

used a panel data set from 1996 to 2010. Analyzing the corporate governance literature, the impact of board characteristics has been considered on the possibility of operational risk events in financial institutions. The findings of the study specify that board size has negative and non-linear relationship with the likelihood of operational risk events. The findings for the event types of "Clients, Products, and Business Practices," and "Internal Fraud and External Fraud," has revealed that a higher ratio of independent directors, firms are lesser exposed to face fraud or fail in meeting the professional commitments to clients. The findings on age and tenure heterogeneousness suggest that a diverse board can have an inauspicious impact on the board monitoring function. These results can enlighten the board demographics and operational risk management in financial institutions.

[9] have investigated the impact of bank specific and macroeconomic factors on profitability of commercial banks in Pakistan. The current study has used five years' data from 2007 to 2011. The dependent variables are return on assets and return on equity. The variables viz.; deposit to assets, bank size, capital ratio, net interest margin and non-performing loans to total advances are categorized under the bank specific variables, whereas inflation, real gross domestic product and industrial production growth rate are analyzed under macroeconomic factors. The study has used descriptive statistics, correlation and regression analysis, which has further investigated that bank size, net interest margin, and industry production growth rate cast a positive and considerable effect on ROA and ROE. The results have found that Non-performing loans to total advances and inflation have are negatively related to Return on assets while real gross domestic product has a positive impact on ROA. The Capital ratio is positively associated with ROE.

[34] have highlighted that Non-performing loans have turned out to be a crucial part of t commercial banking of a state. This study has investigated the empirical analysis of macroeconomic and bank-specific covariates related to non-performing loans. For the purpose a panel data set, comprising on 13 commercial banks for the time period of 2003-2012 has been used. The results of fixed effects with Driscoll and Kraay standard errors, the impact of macroeconomic and bank specific covariates have been found significant. The study has strongly recommended that to take the policy steps which are in accordance to the healthy financial and macroeconomic conditions for reduction of non-performing loans of the commercial banks. In addition, need is foregrounded for a policy approach with stress on the pertinent credit culture and lending policy devised in accordance to economic and financial factors.

[32] have investigated that Non-performing loans are constrictive factor in balanced and smooth financial growth of commercial banking industry. The current study has empirically analyzed the macro-financial factors' impact on changes of non-performing loans. The bank related variables comprise of markets share of banks in loan market, ROA, ROE and statutory liquidity requirement of the banks whereas for the analysis of macroeconomic determinants, a vector of macroeconomic factors has been used which includes interest rate, inflation rate and GDP. The study has used a panel data of 13 commercial banks in Pakistan for the years of 2003-2012. The GMM i.e. more efficient estimator, has been used to sort out the problems of endogeneity. The results have investigated that Macro-Financial determinants non-performing loans are found to be more relevant. For recent application of GMM, see [33].

[36] depicted an analysis of macroeconomic factors and their effect on the percentage of non-performing loans (NPLs) in commercial banks of the EU countries. He has reported that this problem is absolutely germane because in the past years many EU countries faced many economic downturns that can be seen in the main macroeconomic indicators. The rate of nonperforming loans is increased because the debtors have not been able to meet their financial obligations. The Basel III Agreement notes the necessity to consider the economic conditions of a country when assessing the credit risk of loan applicants. The outcomes of this research can be quite helpful for the banks because the main relations between macroeconomics and nonperforming loans have been discovered. Lithuania has one of the highest NPL percentages in the EU for more than 5 years and the significant impact of economic declension on the debtors 'ability to repay debts to banks has been proven. The same state of affairs was observed in other EU countries with fallible economic conditions and it has been calculated that in EU countries the banking systems with formulated economies are not very to the business cycle fluctuations. So, in Lithuanian banks, when managing credit risk, the consideration of economic conditions is vital.

Many empirical studies have investigated the nature of the relationship of nonperforming key determinants either bank specific or macroeconomic indicators of the banking industry. But a very few studies have explored the specific relationship of the board's characteristics in th banking industry with regard to non-performing loans on the same limitations. Therefore, due to the deviating nature of business of banking industry, the analyzed results of the existing research work cannot be measured/ applied. The latest study of [38] has used the variables specific to banks' corporate governance to measure the impact on nonperforming loans. However, with regard to Pakistan economy, presently no study is conducted to establish a significant existence of corporate governance especially in relation to non-performing loans. Hence, we have used the variables which play a key role as measurement of corporate governance in maintaining the health of loan portfolio of the banking industry. Furthermore, the HHI index is used to measure the concentration of assets portfolio in all sectors of Pakistan economy. This addition will help to know how policy constraints regarding credit exposure are aggravating bad loans out of its loans' portfolio.

This study attempts to focus on the aforementioned gaps in literature by strongly determining the impact of board's composition on nonperforming loans in banking industry of Pakistan for the first time. Further added, study also takes into consideration the other bank specific and economic indicators to review the existence of relationship. To measure and review impact of board composition along with other variables on non-performing loans of the Pakistani banking

sector, current study has considered 18 major banks that contributes approximately 90% assets and major ratio of non-performing loans of the total Pakistani banking sector over the period of 2005 to 2013.

3. DATA AND METHODOLOGICAL ISSUES

3.1 Data

The banking industry of the Pakistan economy has a nationwide network for its operations. The banks are registered under the banking ordinance 1962 and State Bank being the regulatory Authority regulates and takes care of the operations and working mechanism of all banks. Therefore, the study considers those banks which are working in Pakistan and entitled as scheduled banks by State Bank of Pakistan. Presently, there are 38 banks enlisted on the website of State Bank of Pakistan as reporting scheduled banks. The list of identified banks, working in Pakistan, is attached. Due to segregated nature of operations, these banks are further categorized as commercial banks, specialized banks, domestic private banks, and foreign banks.

The share of total assets of the banking industry in Pakistan is Rs. 10,486 billion as of December 2013. Major 18 banks have been selected out of these 38 banks for the analysis of the current study. The dataset of 18 banks has been considered on the basis of the share of total assets and NPLs of the banking industry. The selected banks for study analysis have almost 90.0% share in total assets of the banking industry of Pakistan. Furthermore, there is almost 70% of NPLs has been reported by these banks. Based on aforementioned factors, current study uses 18 banks as final data set to establish generalized estimation and robustness in results.

The data set of 18 major scheduled banks of Pakistan has been considered to study the impact of board's composition on nonperforming loans of the banks for the time period of 2005 to 2013. They are chosen on the basis of the share of total assets and NPLs of the banking industry. The selected banks for study analysis have almost 90.0% share in total assets of the banking industry of Pakistan. Furthermore, there is almost 70% of NPLs has been reported by these banks.[1]

The audited financial statements, published on banks' websites, have been used to collect the desired data or the analysis. The balance sheets, profit & loss and detailed financial notes have been used to extract the data from annual reports. To bring consistency of variables for data series, annual accounting data has been used.

3.2 Econometric Model

In current study we look forward a connection between nonperforming loans and Board composition i.e. measured by board size and NEDs to check the role of corporate governance in addressing policy parameters to decrease the classified loans of the bank. Following several studies, as mentioned in the literature review, our model will be as follow and GMM technique will be used for estimation. However, further post estimation tests shall also be applied to check the robustness of estimated coefficients and model results.

$$NPLs_{i,t} = \alpha_i + \alpha_1 NPLs_{i,t-1} + \alpha_2 BS_{i,t} + \alpha_3 NED_{i,t} + \alpha_4 HHI_{i,t} + \alpha_5 TA_{i,t} + \alpha_6 GDP\ Rate_t + \varepsilon_{i,t}$$

4. ESTIMATION OF RESULTS

This part of current study first explains the descriptive statistics of all variables. Further in next part, the correlation analysis of all variables of the study is reported. Afterwards, the findings of regression model are explained and lastly the validity of multivariate regression model is tested.

4.1 Descriptive Statistics

Descriptive statistics specifies that data is strongly balanced with 162 observations for each variable. Further, there is high variation in NPLs and BS variables. The highest variation is in NPLs variable i.e. 17.24 whereas BS is at second number with a variation value of 1.75. The HHI variable provides the consistent performance as compared to other variables because the standard deviation in minimum as compared to other variables, i.e. 0.20 whereas TA depicts the second lowest standard deviation with a value of 0.54.

Similarly, variable BS provides better performance as compared to other variables because mean value of BS variable is highest i.e. 8.43 as compared to other variables. The mean value of TA variable is ranked at second number with value of 8.27 whereas HHI variable has the lowest mean value i.e. 3.16. The details of all descriptive variables are in Table 1.

Table 1: Descriptive statistics of all variables

Variables	Obs.	Mean	Std. Dev.	Min	Max
NPLs	162	8.21	17.24	0.16	94.09
BS	162	8.43	1.75	2.81	3.74
NED	162	6.98	1.55	3.00	12.00
TA	162	8.29	0.54	6.76	9.23
HHI	162	3.16	0.20	2.81	3.74
GDP Rate	162	3.90	1.92	1.61	7.67

Source: Authors' calculation

4.2 Regression Results

The empirical results have been regressed by using the STATA software for the group of 18 banks for 9 years' time-period i.e. from 2005 to 2013. The results of panel data are presented by using GMM methodology. Results of regression analysis under Difference and System GMM method of estimation are in Table 2. Non-performing Loan ($NPLs_{i,t}$) is dependent variable under all methods of estimation.

Table 2: Results of DGMM &SGMM Estimators

Independent Variables	Difference GMM	System GMM
Lagged value of NPLs	0.1666[a] (56.97) [0.0029]	0.9136[a] (88.59) [0.0103]
BS	-1.4657[a]	-0.2368[b]

[1] National Bank of Pakistan, The Bank of Khyber, The Bank of Punjab, Allied Bank Ltd, Askari Bank Ltd, Bank Al Falah Ltd, Bank Al Habib Ltd, Faysal Bank Ltd, Habib Bank Ltd, Habib Metropolitan Bank Ltd, KASB Bank Ltd, MCB Bank Limited, Meezan Bank Ltd, NIB Bank Limited, Soneri Bank Ltd, Standard Chartered Bank (Pakistan) Ltd, United Bank Ltd and SME Bank Limited.

	(-18.65) [0.0786]	(-2.05) [0.1156]
NED	1.0478[a] (18.46) [0.0568]	0.1206 (1.24) [0.0961]
HHI	11.8513[a] (35.21) [0.3366]	2.2185[a] (5.42) [0.4093]
TA	-2.4647[a] (-2.83) [0.8701]	-1.4991[a] (-3.69) [0.4064]
GDP Rate	-1.0781[a] (-38.22) [0.0282]	-0.5382[a] (-13.97) [0.0385]
Coefficient	-	9.4109[b] (2.41) [3.9023]
Observations	126	144
Note: [a] and [b] represent 1% and 5% levels of significance, respectively. z-values are shown in parentheses and standard errors in square brackets.		

The results cited in Table 2 define the impact and nature of relationship between dependent variable i.e. NPLs and independent variables i.e. Board Size, Non-executive directors, HHI, total assets and GDP growth rate by using Difference GMM and System GMM methods. The result shows that Board Size has significant but negative relation with NPLs of the banks under Difference and System GMM methods of estimation. The results show as the number of board members increases, the bank experience low default ratio and helps in better performance of the bank stability. The findings suggest that with a larger board better decisions are taken and it improves the accuracy of the policy, especially regarding the credit risk mitigation and resultantly bank experiences low ratio of NPLs. This finding is similar as it is anticipated and also support the findings of some studies of [26, 50, 23 and 22].

The results of non-executive directors on board depicts the positive and significant relationship with the NPLs estimated under difference GMM method, whereas the nature of the relationship is positive but insignificant under the system GMM method of estimation. The nature of relationship shows that as the ratio of non-executive director's increase in board size of banks, the event of classified loans goes up as the non-executive members are more concerned for short term gain rather implement balanced policies. These results are inconsistent with some studies of [40].

The results of GDP growth rate illustrate that this variable has negative and significant relation with loan losses of the bank that means an increase in these variables the NPLs of the banking industry reduce. The GDP growth rate being an economic factor impacts the NPLs negatively as the GDP Growth rate increases of the economy, the NPLs of the banking industry goes down as the economy experiences the positive key performance indicators and investors find growing opportunities for business which make the business entity profit oriented and thus the repayment capacity of borrowers gets improved. These results are in line with the studies of [35, 32], and 31].

The current analysis has shown a negative association with bank size/total assets of the bank and NPLs. It depicts the good quality of assets results in a low default ratio of the banks. The banks are prudent in credit creation. These results are inconsistent with the studies of [5,9,49 and 16].

The HHI has a positive significance with the NPLs of the banks. The results illustrate that HHI value increases and diversification goes down which increases probability of NPLs also increases. The results are in line with the existing literature as suggested by [5].

The results are showing that coefficient of lagged value of NPLs is 0.914, which is less than 1, thus ensures the stability of dynamic relationship of the model [43]. Furthermore, the coefficient is statistically significant at 1% levels of significance.

In a nutshell, it is evident from regression results that the NPLs is negatively but significantly related with the Board size, Bank Size and GDP growth rate where it has positive but significant relationship with Non-executive directors and HHI.

4.3 Validity Regression Results

Table 3: Diagnostic Parameters and Tests

Tests	**Difference GMM**	**System GMM**
Number of observations	126	144
Number of instruments	34	42
Hansen test (Overall instrument validity)	$\chi^2 = 0.946$	$\chi^2 = 0.996$
Test of Validity of Instruments Subsets		
Hansen Test (GMM style instruments)	$\chi^2(28)=0.946$	$\chi^2(28)=0.953$
Hansen Test (IV style instruments)	$\chi^2(22)=0.917$	$\chi^2(29)=0.981$
AR(1) test	p-val.=0.071	p-val.=0.217
AR(2) test	p-val.=0.354	p-val.=0.282
Source: Authors' estimates		

This study has applied different post estimation tests to testify the validity of available results. Te overall significance of the model is acceptable at 1%level of significance as per Wald-test of overall significance. Number of observations are greater than that of instruments i.e. (162 > 42). Specification and over identifying restrictions are judged via Hansen test which has a p-value of greater than 0.05. i.e. (p-value = 0.946>0.05) implying that all over-identified instruments are exogenous. The Arellano and Bond test for first order 'M_1' and second order 'M_2' correlation, i.e. AR (1) and AR (2) show p-value of greater than 0.000. i.e. (M_1) p-value = 0.071> 0.05 and (M_2) p-value = 0.354> 0.05. Hence there is no second order serial correlation in residuals. Furthermore, the post estimation result shows that the sub sets instruments used under GMM style and IV style are also valid.

It is also pertinent to mention here that the difference GMM results are better in terms of the requirement of AR (1) & AR (2) as given by [2]. According to Arellano *et. al*., existence of AR (1) is desirable, but not AR (2) whereas the system GMM fails to fulfill this requirement [2]. The results are show an ideal situation as there is no existence of any order of serial correlation in the model and difference GMM fulfills this requirement.

The results for t proposed relationship between the NPLs and non-executive directors are significant and according to existing studies in difference GMM estimates instead of System GMM estimates. There exists a strong relationship between the non-executive directors and NPLs. Since the major decision makers are the board members and they have a strong role in devising the policies and Board members also play an important role in the mitigation of the risks especially

credit risk. Due to the importance of the board members this study relies more on the difference GMM estimates.

5. CONCLUSION AND RECOMMENDATIONS

The empirical results of the study unfold that Board Size has a significant and negative impact on NPLs of the bank. As the number of directors in a board increases, the NPLs of the banks go down. The results also show that number of Non-executive directors are positive, but significantly related with the NPLs. The results suggest that with a greater number of non-executive directors increase the NPLs' of the bank. In Pakistani scenario, the outsiders/NEDs are more concerned to increase short term performance of the bank and take high risks. This factor resultantly increases the credit risks of the bank.

This study also explained that rise in bank size and GDP growth rate have a negative and significant impact on NPLs' of the bank while on the other side increase in value of the HHI increases the NPLs as higher the value of HHI shows low level of diversification of advances.

Being the guardian of thbanking sector, State Bank of Pakistan must exercise its power and formalize some rules under code of corporate governance regarding board composition that ensures credit risk aversion strategies to bring down the NPLs. As higher ratio of NPLs stagnant the economic growth. Hence, the current study has also empirically proved that board composition has a significant impact on NPLs. The anticipated policy paper must standardize the board size in any bank and number of non-executive directors to ensure that more stable, consistent and steady growth oriented policies may be originated for low NPLs.

This study is also helpful for international regulatory bodies like BASEL committee, which may integrate above suggested variables and issue new strategies to ensure quality of corporate governance and stability of the banking industry.

As this study considered the Board Composition in shape of Board Size and number of Non-Executive Directors to analyze their influence on NPLs, but in future the board characteristics like experience, age group, gender diversity and political representative etc. may also be incorporated to explore their impact on credit risk.

It is further added that this study is only limited to the banking sector of Pakistan. In future a comprehensive study may be expanded to international financial sectors to derive more decisive/generalized results for regulatory bodies.

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