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Impact of Bank Internal and Macroeconomic Factors on Bank Lending Behavior in Pakistan

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ABSTRACT

The research aim of this study is to find out the relationship of bank internal and macroeconomic variables on bank lending behavior. The study was conducted on commercial banks functioning in Pakistan including both conventional and Islamic Bank. The data was collected from reliable secondary sources. Bank specific data was extracted from published annual accounts available on data bases of State Bank of Pakistan, Pakistan Stock Exchange and banks own maintained websites. The macroeconomic data was taken from World Bank data Bank. The data of eleven years was taken from 2007 till 2017. Impact of Bank internal & Macroeconomic factors like Return on Assets (ROA), Return on Equity (ROE), Non-Performing Loans (NPL) and Gross Domestic Product (GDP) was checked on Bank Lending Behavior (BB). Interest Rate (IR) was taken as moderating variable. No multi-collinearity was found by Variance Inflation Factor test. But, autocorrelation and heteroskedasticity were present where were removed by using IR and white cross section tests respectively. Hausman test recommended random effect model as appropriate and same was applied. Findings revealed that NPL and ROA have negative and significant impact on bank lending behavior. Impact of ROE and GDP were found positive and significant. Whereas Interest rate (IR) were found having no moderating impact on any of said relationships. All above variables were not checked together in Pakistan environment previously and hence its study was unique in nature. Banks are recommended to diminish the NPL to avoid deterioration of loan growth and may take better advantage of lending during economic prosperity and also when return on equity is rising. They should also take into consideration the ROA for lending growth policies.

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1 Introduction

The banking sector is like life blood in field of modern commerce and trade for providing them finance as major source. The rising trend of globalization has made efficiency concept more crucial for both financial and non-financial organizations and banks are major parts of them. Banks depend on marketing strategy that

is competitive which determines the success and growth. The banking sector modalities have been changed in new millennium as compared to ways used in the past years. (Hussain & Bhatti, 2010).

Financial markets facilitate the investors by sharing risk and allocating assets. Among financial institution banks are of vital importance as proving massive finances to investors. Borrower like firms and household get loans from banks and banks are prime source of funds. In well developed countries people use borrowing but underdeveloped countries capital market less relies on funds from external sources. The external funding is bank credit in financial based economies. Hence, bank loans have significant importance for firms and households. (Kashif et al., 2016).

Banks are performing their key role in growth of any economy. By performing various financial activities banks have become essential part and parcel of economic growth. Through lending the banks provided funds to almost all sort of businesses to meet their financial requirements which is used for economic activity to earn profit. Lending is pivotal activity of commercial banks across the globe. In this study we are going to find out the relationship of various factors which have impact on lending of banks. These includes Non-Performing Loans, GDP, Return on Assets, and Bank Equity which have major impact on banks' lending behavior as recommended in various literatures.

Non-performing loans are stuck up loans or closed loans where banks are unable to recover and hence include them as non-performing loans. IMF defines it as unquoted, past due by 90 days or plus of principal amount or interest amount. NPLs are more common in Agri financing but it is also a considerable part of SME or commercial Loans or other demand finances advanced by bank. NPL are main constrain in the way of financing of banks as its cause's losses and provision for banks and hence bank could face profitability losses. NPLs are increasing with the passage of time and with the increasing volume of loans. NPL recoveries may be made by centralization or decentralization. In centralization banks, govt and regulatory bodies collectively devise a policy to handle NPL. But in decentralization bank is all alone to manage recovery by giving incentives or initiating any legal proceedings against the defaulter. This study is being conducted under Pakistan context and NPL impact on Pakistani commercial banks loan growth will be checked through this paper.

One of the important factors is quality credits. The rapid increase in credit may lead to selection of low-quality assets which will have adverse impact and reduce quality of credit will be affecting negatively the NPLs (Erdinç & Abazi, 2014). The loan quality, bank cost index and deposit client have very close correlation with bank loans. In past decades the loan quality remained stable until the global crunch in 2007-2008. From that crises the quality of assets badly affected and deteriorated sharply owing to global economic recession. The consequences of recession came as less credit quality and sharp increase of non-performing loans. The growth varied significantly among various countries and specifically countries of same group (Kjosevski and Petkovski, 2017).

The reduction of non-performing loans is inevitable condition for improvement of economic status. On the contrarily, if the non-performing loans could not be reduced and increased with same pace this will hinder economic growth and will impair efficiency of economy (Jolevska and Andovski, 2015).

In so many papers the non-performing loan relationship was checked with loan growth or bank credit owing to its good relationship with economic conditions. The said paper also focusing on relationships between credit growth and non-performing loans. By bank credit we will be able for prediction of future financial

conditions where good growth of credit will participate in any economic or financial crunch and also decline significantly during economic recession (Awdeh, 2017).

Return on Asset is an internal factor of Bank. It is the earning compared to Bank's total assets. Various study showed that banks intend to have higher return on assets and for that banks increases their lending and other use other channels of investment. The banks should keep close eye over quality assets instead of showering to earn maximum return. In this study we will detect the impact of Return on Assets over Banks' Lending Growth.

Background of the Study

Commercial Banks have overcome Pakistan's financial system. By nationalization of local banks and growth of financial organization of public sector growth, the financial history of country has changed. At termination of 1980s this became quite obvious that socio economic objective cannot be reached by nationalization. The public sector non-financial and banking institutions were held liable for deterioration of asset quality, financial inefficiency and increasing threat of lowering of financial institution. By end of 1990 banking industry share of total assets raised to 90 percent and rest belonged to foreign banks as there was lack of domestic private bank at that time. Nevertheless, such a high share of banks in deposit, investment and advances, banking system passed under significant changes following 1997 when banking regulation process was in lined with best practices of international sector (State Bank of Pakistan, 2009). Since Pakistani banking structure is completely diversified therefore, Pakistani banking system presents exciting case. When the data of the banking sector is analyzed by checking net profit before tax with total assets of the company it is revealed that that yield is very low (the study period data was taken) (Ramlall, 2009). The Romanian Economic Journal (March, 2011) 63 Internal factors considered are bank specifit like loans, deposits, capital and size and other external factors taken were INF, GDP and MC.

Prior to financial crunch significant credit growth was observed. This was caused by financial markets deregulations and development of information technology in this sector of banking (Panopoulou, 2005; Sanchis-Arellano and Rinaldi, 2006). Later on, the trends after financial crises have been reversed and currently banks are not willing to lend more and lessened. This has focused lending behavior of banks (Panizza and Micco, 2006; Olokoyo, 2011; Ngomsi and Djiogap, 2012; Swamy and Sreejesh, 2012; Ladime et al., 2013). The basic determinants as discussed in these researches includes bank specific like capitalization and size and other macroeconomic like monetary policy and gross domestic products (Djiogap and Ngomsi, 2012; Ladime et al., 2013).

Problem Statement

The empirical literature recommends that there is opposite correlation between NPL and lending behavior of the bank. Whereas the ROA and ROE, and Gross Domestic Products have also impact on banks' lending behavior. In order to improve bank's lending, the relationship of internal and macroeconomic factors with lending behavior is to be examined in this study to find out their impact either positive or negative or no affect.

Research Questions:

1. What is the impact of NPL on Bank Lending Behavior?
2. What is the impact of Return on Assets on Bank Lending Behavior?

3. What is impact of Return Equity on Bank Lending Behavior?
4. What is impact of GDP on Bank Lending Behavior?

Research Objectives

The object of this study is to investigate impact of ROA, ROE, NPL & GDP on Bank Lending behavior (credit growth) in the context Pakistan. Interest Rate is taken as moderator against relationship of aforesaid variables.

Research Gap:

Multiple variables including ROA, ROE, NPL and GDP relationship was checked with Bank Lending Behavior with moderator variable Interest Rate. The study is done in Pakistan and unique in nature as previously all variables were not checked together in Pakistan and that is actually research gap of my study. Earlier in Pakistan NPLs determinants were investigated and no such research work is done that correlate said variables. Hence, the current work is done to fill the gap that exists in the literature in the context of Pakistan.

2 Literature Review

Almir Alihodžić, İbrahim Halil Ekşi in 2018 studied about exogenous and endogenous factors that have impact on rate of credit growth of some Western countries including Bosnia, Herzegovina, Serbia & Croatia and credit policy of Turkey was investigated by multiple regression analysis. The credit growth rate was used as dependent variable and non-performing loans rate with deposit growth rate, ROE & Growth rate of GDP were used as independent variables. STATA 13 Software was used to investigate the relationships among all dependent & independent variables. Quarterly based data from 2007 to 2017 were analyzed owing to its high significance. Regression model was used and the results found from regression were inverse relationship between the NPL rate and credit growth rate for every country included in this study. It shows that bank credit growth and risk-taking tendency negatively affected by problematic loans. This will cause less profitability of the bank and increase in systematic risk of banking industry. Moreover, the results also envisaged the positive relationship among other independent variables and dependent variables. On one side positive relationship was observed there between economic growth and credit growth rate. On the other hand, positive relationship is also observed between deposit rate and loan growth rate. Positive relationship is seen between Return on equity and credit growth rate in all countries except Croatia where negative correlation was observed.

Nguyen Thi Hong Vinh in (2017) investigated the non-performing loans on banks' lending behavior and profitability. For this purpose, empirical framework was used to check inverse relationship of banks' non-performing loans & profitability with banking behavior. The researcher applied Generalized Method for which 34 Vietnamese commercial banks' data was collected for the period from 2005 to 2015. The researcher found that non-performing loans has significantly negative impact on banks' profitability and lending behavior.

Doriana CUCINELLI (2015) conducted a research to understand the relationship between banking lending behavior and credit risk during financial crises in Italy. Their second purpose was to check the behavior of cooperative and commercials during financial crises. 488 listed and unlisted banks were taken into consideration and data from 2007 to 2013 were collected. OLS Regression Model and Fixed effect

regression model as suggested by Hausman Test was used. The fixed effect controlled the heterogeneity among banks. Bank internal data was collected from banks database and macroeconomic from data base of International Monetary Funds. The dependent variable was taken loan growth each year and independent variables were divided into two categories that were banks' specific and macroeconomic. Bank specifics were non-performing loans and loan loss provision & macroeconomic were unemployment, inflation and GDP. The results showed that credit risk has negative impact on banking behavior. Credit risk was taken as Loan Loss Provision and non-performing loans. GDP has positive impact and unemployment has negative impact on lending behavior of the bank.

Chaiporn Vithessonthi (2016) examined the association between non-performing loan and Bank Credit Growth. This research was conducted in an economy under pressure of deflation. GMM regression and panel OLS were used to get findings. Sample of 82 Commercial banks' data was used in Japan for the period 1993 to 2013. He found positive correlation between non-performing loans and bank credit growth prior to financial crises in 2007 and afterwards the correlation became negative. He finally suggested that high bank credit growth will cause maximum level of NPL loans & as a result the profitability will be low.

Matteo Accornero, Luisa Carpinelli, Piergiorgio Alessandri, Alberto Maria Sorrentino and Luisa Carpinelli (2017) checked the influence of non-performing loans on credit supply to non-financial firms of Italy. The data set was taken for the period from 2008 to 2015. Two variables borrower characteristics and shift in demand were taken as control variables. Supervisory intervention also exploited Asset Quality Review of 2014 to recognize exogenous variance of non-performing loans of banks. Their findings were that non-performing loans not causally affect the lending behavior of the banks but negative correlation is due to changes in firm's conditions and tightening of their credit demand. Conversely, higher Loan provisions owing to new non-performing loans will have negative impact on credit supply.

Zhang, D., Cai, J., Dickinson, D.G., Kutan, A.M. (2015) have carried out a research in China to inspect the impact of NPL on banking behavior. For this purpose, regression model was used. Sample of 87-different banks including commercial, rural commercial and state owned were tested for moral hazard. Moral hazard hypothesis was proved as higher non-performing loans lead to riskier lending which caused deterioration of financial system and loan quality by creating instability.

Lee and Hsieh (2013) examined 42 banks from Asia to check the relationship of bank capital and commercial banks risk taking. The result found that ratio of total assets has inverse correlation with bank risk taking.

Diyan Lestari (2018) study aimed to analyze the impact of bank capital revere, corporate governance and NPL on risk taking of banks of Indonesia. Corporate governance related to management decisions for policy making purposes. Whereas NPL and capital reserves represents the financial performance of banks. The study results showed that NPL has inverse relation with risk taking behavior of banks. On the other hand, capital reserves were found having no significant impact on bank risk taking.

Jouini and Messai (2013) studied determinants of NPL in Italian, Greek and Spanish banks, and they found that problematic loans will go high when real interest rate and unemployment rates are high and will decrease with GDP growth rate & decrease of profitability of bank's assets.

At macroeconomic level many studies were conducted to check the relationship between bank risk and loan growth in series of literatures (Borio et al., 2002, Keeton, 1999;) but there is less research on differences of

relationship of cross section. The contribution towards relationship of bank lending behavior and NPL is low. Lu et al. (2005), has conducted a study on sample based on Chinese public listed companies to discuss the relationship of Non-Performing loans with banks' lending behavior. They concluded that Chinese banking sector financing is biased as they are more likely advancing to state owned firms despite of high credit risk of these firms. This shows that Chinese banks are fewer offering finances to their private sector firms, they prefer to finance state owned.

Panetta (2013), studied about the cooperative banks, they showed that cooperative bank activity stretched drastically from time 1995 to 2008, and so their market share is also increased. He also found that during early years of financial crisis (2008-2009), stability of loan supply of cooperative banks is seen due to their sound financial status and stability of funding.

In 2011 the second half of the year the cooperative banks liquidity is affected due to sovereign loan crisis and in October 2011 first time the net interbank status was in debt of cooperative banks. The cooperative banks showed deterioration in credit quality. In 2012 non-performing loan stock was increased and hence almost one third of the loans impaired.

Unanimous evidences were found in all studies that banks' risk appetite was always compromised by related credit losses. The greater in nonperforming loans is assessed to a diminishing of bank credit portfolio. Thus, negative relationship was found between non-performing loans and loan growth rate.

Literature has not new Models that link economy activity with credit risk. Many Theoretical papers showed business cycle models that typically introduced links between quality assets and economic activities. The classical literature investigating the relationship between finanacial fundamentals and macroeconomic environment. (KingandPlosser, 1984), Bernankeand Gertler (1989), Moore and Kiyotaki (1997) and Bernanke et al. (1998). A study, published by Pesaran et al. (2006), produced a framework which connects credit portfolio value changes with vibrant global macro-econometric model & found that business cycle and relationship of firms are main forces of probabilities that are default. A vast and diversified empirical literature is available that shows the interaction of macroeconomic conditions and quality assets. Most of the findings of relationship of economic factors and assets quality showed positive relationship despite of different measure of analyzing assets quality. Many of the researchers found that there is link of credit risk and real economy that is looked at progress of expected default frequency, LLP (loan loss provision), LGD (loss due to non performing loans and default are used for measurement of asset quality.

More currently, Louzisetal. (2010) studied NPL determinants in banking sector of the Greek and after analysis they found that Assets quality of Greek banks could be elucidated mainly by macroeconomic indicators like unemployment, gross domestic product and interest rate and quality of management. The study contribute to the recent literature of empirical determinants of nonperforming loans by employing mainly unique sample of data encompassing many countries. Cross country results variation in NPL tends to yield more quick results as compared to individual countries as time series of nonperforming loans are short typically and covering 10 years annual data in most cases. Simultaneously, bank by bank studies are very useful in case of micro prudential background are existing for some economies only for not to check asset quality with regard to structural features of cross countries impact.

Before examining the connection of NPL with credit supply it is meaningful to see the difference between impact of level of NPL and impact of increase in NPLs. More simplifying that to evaluate the level of NPL ratio effect on credit supply by using comparative statistics; checking impact of rise of NPL is equivalent to

evaluating from one status lower non-performing loans to another higher non-performing loans. The mechanism in two positions are interlinked, despite we consider that is very much useful to justify the applied mechanism and we still utilize it to guide our analysis. The worst level of balance sheet linked with high level of nonperforming loans could affect the credit supply by three ways; accounting mechanism in which credit with lower quality will affect the bank equity by risk weights and increase in cost of funds by market pressure and change in attitude of risk taking by bank. One side the high level of nonperforming loans shows high risky assets. The worst credit quality depicts the higher weight of risk on bank credit portfolio for calculation of capital ratios which is a measure to cope with expected risk, thus to cover the expected risk the 58management will reduce their balance sheet size. Second expectation is that higher non-performing loans banks are compelled to down their operations due to pressure of market instead of their own will. If higher non-performing loans is considered as higher risk and less management abilities and if the same is not supposed to offset with appropriate coverage ratio the bank has to bear higher external cost. The result will cause loan supply will be declined. Finally, bank attitude towards risk might be changed by non-performing loans. The banks with thin capital are much sensitive for risk tanking and therefore supply credit to weak borrowers with low interest rates. This type of channel more opposite than said discussed above.

Lastly bank risk attitude might be changed by NPLs. The banks with thin capital are more sensitive to of monetary policy risk taking channels and are willing more to finance weak borrower when interest rate is low. Interestingly, such channel pushes to opposite direction as compared to those discussed above; in case of high NPL banks have encouragement to lend more than IRB (internal rating bases approach), banks are calculating their risk weights based on losses that realized non-performing loans; in case where managers responses is independent to increase of NPLs might be emphasized by pressure of regulators due to rise in capital absorptions for the rest of the portfolio,. Jiménez et al. (2014), competitors' and more accurately overly lax conditions and unsuitable borrowers-following gamble of resurrection type logic.

On the contrary there are various implications of rise of NPLs. A rapid rise of nonperforming loans especially when it is large, unsure and experienced at that time when profitability of the bank is low will imply great adjustments of the banks both voluntarily and automatic to revive balance sheet status. More of adjustments are done through profit and loss account. For appropriate coverage ratio and to protect its self against risk related to mounting non-performing loans bank will increase its provisions for loans losses in order to diminish its exposure volume to the borrowers' defaults. Higher level of loan loss provisions lower down bank return on asset and incase if it is huge and prolonged enough to cause negative profitability. In the short run readjustment can be triggered by increasing NPLs may furnish the same results as in reduction of capital and hence reduction of capital barriers is known for determination of credit supply contraction. Finally, in absence of well-defined theoretical framework will make it difficult to characterize the interaction fully between these mechanisms and the conditions by which each of them may operate.

Model, Data and Methodology:

Model Specification

The following are estimated variables and their impact on model explained.

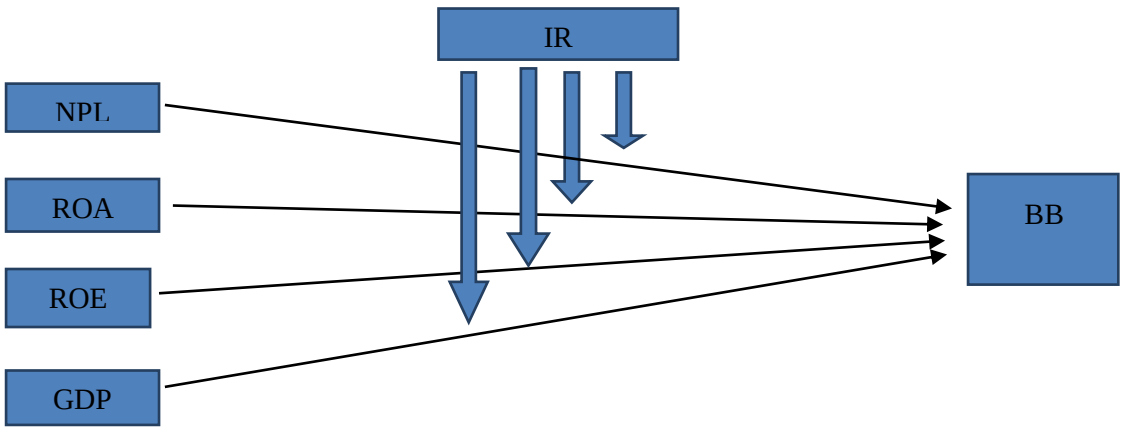
$$BB = \alpha_0 + \alpha_1 NPL + \alpha_2 ROA + \alpha_3 ROE + \alpha_4 GDP + \alpha_5 IR + \alpha_6 NPL*IR + \alpha_7 ROA*IR + \alpha_8 ROE*IR + \alpha_9 GDP*IR + \boldsymbol{\varepsilon}$$

Where:

GDP = Gross Domestic Product ROA = Return on Assets
ROE = Return on Equity NPL =Non Performing Loans
IR = Interest Rate GDP = Gross Domestic Product Per Capita
ε = Error Term

There is Banking Behavior (BB) is used as dependent variable and ROA, NPL, ROE and GDP are used as Independent Variables, whereas Interest Rate (IR) is taken as Moderator Variable.

Theoretical Framework



Sources of Data

Bank specific data for the current study was collected data bases of concerned banks, data base of Pakistan Stock Exchange and State Bank of Pakistan. Macroeconomic data (GDP per capita) was extracted from World Bank data bank.

Description of Variables

Now this segment has briefly explained about the all dependent and independent variables. Beside these lines, in this review the information is collecting from each one of those sources which are, generally apparent. In this present review we select secondary source of panel data information. The data is bank wise cross section. It is utilized to judge the impact of NPL, ROE, ROA, and Gross Domestic Product on Banking Behavior which is Loan Growth Rate. Interest rate is taken as moderating variable to check moderation impact on relationships of Dependent Variables and Independent Variables. Data of this study was gathered for period of 11 years ranging from 2007 to 2017 of 20-Commercial Banks functioning in Pakistan including both conventional and Islamic Banks. The outline of variables occupied in current study is given in the table along with their definitions and source of data is given below:

Non-Performing Loans (NPL)

NPLs are stuck up or closed loans where banks are unable to recover. IMF defines it as unquoted, past due by 90 days or plus of principal amount or interest amount. NPLs are more common in agri financing but it is also a considerable part of SME or commercial Loans or other demand finances advanced by bank.

Return on Assets (ROA)

Return on Asset is an internal factor of Bank. It is the net earning to total assets. Here we are investigating the relationship between ROA and Banking Lending Behavior.

Return on Equity (ROE)

Bank equity is also very important factor which significantly affect the banks' lending. Return on Equity is defined as earning against equity. We also check relationship of Return on Equity and Banking Behavior.

Gross Domestic Product (GDP)

"Gross domestic product (***GDP***) is the economic value of all the final goods produced & all services provided within a country's boundaries in a specific time period", in short ***GDP*** is a wide measurement of overall nation economy action.
In present model, gross domestic product used as a dependent variable and GDP known as a primary and best indicator that is used to investigate the fitness of country's economy. Its present the value of all goods and services produced by way of all the individuals and corporation in the country. It may be inhabitants of foreign owned establishments. The matter is that, if they are situated with the state's boundaries, government of the country calculates their goods and services as GDP.

Interest Rate (IR)

Interest rate is the rate at which a bank finances to borrower. In this study Interest rate is taken as moderator to check its impact on relationship of IVs with DV.

Correlation Analysis

Multi-collinearity is caused by inter-correlations between explanatory variables. Hence, the most valid way in order to identify multi-collinearity problems that will come through correlation coefficient those variables.

Data Analysis Methodology

Panel Data

Longitudinal or Cross-sectional time series are the name of panel data. Data consist on multiple cases which may be based on population, institutions, countries etc. and time period can be consider two or more-time phases. Therefore, studying the Individuals and objects can be considered at different points in time likewise days and years for panel data. Current study used bank wise panel data. Data consists of eleven years from 2007 to 2017.

There are two model one is called fixed effects model while second is random effects model. These models frequently used for this type of study analysis. Panel data considered most hopeful when is confident of that resulting variable influences on descriptive variables and it cannot check but they have any correlation with the experiential instructive factors. Both the characters of cross sectional and time series data are present in panel data.

Different Methods of Estimation

Generally, there are three different ways or procedures which are used for estimation of simple linear panel data models: (a) Through fixed effects, (b) Through random effects & (c) With a common constant.

Common Constant Method

The common constant means that the intercept for the deferent cross section do not differ and same intercept has been allowed. This cross section might be companies, countries or other Entities that can from the panel data. This method spouses that data is priori homogenous means that includes the similar type countries, companies etc. as concluded by Hall & Asterou in 2007. Similar type of companies might be high growth, high income countries or the countries from a similar region like European Union etc. Nevertheless, this study proposes to engage both estimation models fixed & random to finally select the appropriate one.

The pooled ordinary least square method also called common constants, produces results based on main assumption that there are no differences between cross sectional dimensions data matrices. Moreover, it estimates common constant for countries or all cross sections. It is more beneficial on hypothesis of priori that data sets are priori harmonized data set (For instance sampling is done of European Countries or other higher income countries). But this is more restrictive and in case of extra interest, there will involvement of the random & fixed effect estimation as done by Stephen G.Hall in 2007.

Fixed Effect Method

It means that intercept is measured as cross sections specific. In fixed effect method intercepts for every cross section would be reported independently. This case will include, the model is presented in the equation 3.2 above. It is a kind of dummy variable method because it comprised of dummy for each cross section to imprison the different constant for every group. That is why this method is called least square dummy variables (LSDV). Following model can better explain the instrument of the fixed effect estimation in the panel data format.

The constant is fixed effect is considered as group specific or section specific, it indicates that for each group a specific constant is agreed by the model. The other name of estimation of fixed effect is called least squares dummy variables estimator to permit special constant for each group.

Random effect Method

Random effect method supposes that intercepts are not fixed across the groups but are random parameters. This method is treated as a substitute to the judgment of the fixed effect method. In the same way the previous analytic, this decision to select among fixed and random effect will depend on the post estimation tests. Random effect model is based on the assumption about the division of random mechanism that makes it less attractive. This shortcoming, because of the biased and conflicting estimates of random effect in that the disregarded cross section effect might show a relationship with repressors. In such case the estimates might prove biased and contradictory. But random effect model brings the confident compensations because it requires lower number of parameters as are required in the fixed effect estimation. In addition, it could also come in as attractive because it does not hamper the inclusion of the dummies, it does not control the additional repressors having equal observation within the cross section. As substitute to this method, the random effect is used for estimation. The difference of random effect and fixed effects is that fixed effect model uses section or group specific constant but in case of random the parameters would be random.

4 Results and Discussion

Preliminary Analysis of Data

The foremost step is used before starting the analysis of proposed research work. We conduct the preliminary operation on data to analyses it. For this purpose we set descriptive statistics, VIF of variables for checking of Multicollinearity, Autocorration Check, Hetroskadasticity Check, Huasman Test and main Random Model were applied (Hausman Test Recommended Random Model as more appropriate) .

Table – 4.1 Variance Inflation Factors

Variables	**VIF**
ROA	1.498861
ROE	1.447633
NPL	1.209096
GDP	5.612711
IR	5.603989

In this table VIF is checked to find out the multi-collinearity of variables. ROA, ROE & NPL, GDP and IR have VIF less than 10 which means no multi-collinearity exists.

Table- 4.2 Breusch-Godfrey Serial Correlation LM Test

F-statistic	9.34109	Prob. F(2,212)	0.0001
Obs*R-squared	17.81707	Prob. Chi-Square(2)	0.0001

In above table, we checked autocorrelation by using Breush Godfrey LM Test and found autocorrelation exists with 1% significance. Hence, this is the problem of the data which have negative impact on analysis. The same as removed by using AR Test.

Table-4.3 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	9.34109	Prob. F(2,212)	0.0001
Obs*R-squared	17.81707	Prob. Chi-Suare(2)	0.0001
F-statistic	15.55138	Prob. F(5,214)	0
Obs*R-squared	58.63278	Prob. Chi-Square(5)	0

Table reports the result for Heteroskedasticity test Breusch-Pagan-Godfrey analysis. The results showed that F-statistic 15.55138 and the P-value of 0.00, which is less than 0.05. Hence, Hetroskedasticity exists in the data. The same problem was removed by using white cross section test.

Table-4.4 Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.

			Prob.
Cross-section F	2.640796	-18,165	0.0006
Cross-section Chi-square	48.100029	18	0.0001

In this table we use the Random Fixed Effect to select the common or fixed effect method. The results of test concludes that the P-Value is less than 5%, so the fixed effect method is more appropriate for the data of this study as compared to common effect.

Table- 4.5 Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section randc	0	5	1

Correlation Random Effect - Hausman test is applied to choose the best appropriate model between fixed effect and random effect. The results found that the P-Value is more than 5% which means random effect model is more appropriate for this study.

Table-4.6 Main Results of the Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROA	-0.516428	0.154896	-3.334039	0.001
ROE	0.20902	0.063245	3.3049	0.0011
NPL	-0.182568	0.028102	-6.496516	0
GDP	0.443251	0.059248	7.481304	0
IR	0.012559	0.169868	0.073936	0.9411
R-squared	0.247055			
Adjusted R-squared	0.226594			
		Durbin-Watson stat	2.048967	

Source: Software E-Views 10

In this model BB is the dependent variable while ROA, NPL, Return on Equity (ROE), Gross Domestic Product (GDP) are the independent variables. The main results of this study show that ROA and NPL are significant have P-Value 0.001 and 0.00 and co-efficient values are -0.516428 and -0.182568 respectively which means ROA & NPL are significant and have negative impact on Banking Lending Behavior (BB). Return on Equity (ROE) and Gross Domestic Products (GDP) have P-Values 0.0011 and 0.00 and co-efficient values are 0.20902 and 0.443251 respectively that shows the positive and significant impact of ROE and GDP on BB. R-Squared and Adjusted R-Squared are comparatively low which is owe to very different Dependent Variables.

Table: 4.7 Impact of interaction effect of IR*ROA, IR*ROE, IR*NPL and IR*GDP on BB.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROA	-0.517851	0.152199	-3.402467	0.0008
ROE	0.58725	2.476666	0.237113	0.8128
NPL	-0.181837	0.025392	-7.161309	0
GDP	0.223589	1.442437	0.155008	0.877
IR	0.730392	4.709994	0.155073	0.8769
IR?*ROA	2.703941	3.156033	0.856753	0.3927
IR?*ROE	-0.340478	2.222106	-0.153223	0.8784
IR?*NPL	-0.012489	0.101605	-0.122921	0.9023
IR?*GDP	-6.992834	4.360276	-1.60376	0.1105

In above table mediating impact of Interest Rate was analyzed. It is found that P-Values of IR with ROA, ROE, NPL and (GDP) ARE 0.3927, 0.8784, 0.9023 and 0.1105 that shows impact of IR is insignificant. Hence, Interest Rate (IR) has no moderating impact on relationships of Independent Variables with Dependent variables.

Conclusions and Policy Recommendations

Findings

It was found that there is negative & significant relationship between NPL and Banking Behavior supported by study conducted by Doriana CUCINELLI in 2015 by conducting a study on Impact of NPL on bank lending behavior from Italian banking Industries and the same is also approved by Nguyen Thi Hong Vinh in 2017 that NPL has negative impact on bank profitability and lending behavior. Return on Assets was found having negative and significant impact on bank lending behavior which means that on higher Return on Assets banks will not go aggressively towards lending. Return on equity was found with positive and

significant impact on bank lending behavior which was previously endorsed by Almir Alihodžić, İbrahim Halil Ekşi in 2018 in a study done in Turkey and some Balkan countries that Return on Equity has significant and positive impact on credit growth. The impact of GDP was positive and significant on bank lending behavior which approves the results of study of Doriana CUCINELLI in 2015 & the results are further also supported by Tahir, S.H., Shahzadi, I.Q.R., Ali, I., & Ullah, M.R in 2015 that there is strong relationship between credit growth and economic growth.

Conclusions

The basic goal of current study is check the impact of some banks specific and macroeconomic variables impact on bank lending behavior. The study examined the relationship empirically. The impact of ROA, Return on Equity (ROE), NPL and Gross Domestic Product (GDP) are checked separately on the Bank Lending Behavior (BB) and the Interest Rate (IR) was taken as moderating variable. The whole work is done within Pakistan and data collected from 20 Commercial Banks functioning in Pakistan including Conventional and Islamic Banks.

Experiential results found that there is negative and considerable link between ROA and Bank Lending Behavior (BB). The relationship between the return on assets and bank lending behavior was found as negative and significant. The Literature work also supports the findings. Kithinji, (2010) found that bulk of profitability of commercial banks is not influenced by credit. The relationship between NPL and Bank Lending Behavior (BB) is also found negative and significant which means that rising NPL will cause deterioration of credit growth. In literature many researchers found that NPLs have inverse and more significant effect on bank lending (Awdeh 2017; Shingjergj and Hyseni 2015; Rabab'ah 2015; Ivanovic, 2016). Inverse and negative relationship between Non Performing loans and Banking Behavior was also found by Doriana CUCINELLI in 2015 by conducting a study on Impact of non-performing loans on bank lending behavior from Italian banking Industries that support results of my study. The Return on Equity (ROE) and Bank Lending Behavior (BB) relationship was found positive and significant that shows that increase in ROE is better for credit growth. In other words the Return on Equity supports the credit growth. Variable ROE have positive impact on credit growth in many countries. Higher profitability causes higher bank credit growth (Allen.et.al, 2017).

The relationship of GDP and Bank Lending Behavior is positive and significant. Hence, economic growth of a country support or enhance the lending growth of commercial banks. The results are supported by literature. From previous works, it is concluded that found that the relationship between Banking Behavior and Gross Domestic Product is positive and considerable. (Alihodžić and Ekşi, 2018),

Hence from above results it is concluded that profitability on assets is not affecting the the credit growth of the bank and earning on equity has positive impact. The economic growth is beneficial for commercial banks as it causes the growth of lending and raise earning. The stuck up loans are negative for credit growth and increasing NPL means less quality assets are being booked and hence it will deteriorate the credit growth.

The moderator variable Interest Rate (IR) was applied for all relationships of independent variables on dependent variables. IR and ROA (IR*ROA) has positive and not significant relationship. Interest Rate (IR) and Return on Equity (IR*ROE) impact is positive and not significant. Similarly, Interest Rate and Non Performing Loan (IR*NPL) is also positive and insignificant. The relationship of Interest Rate and Gross

Domestic Product (IR*GDP) is also found positive and insignificant. Hence, mediating variable Interest Rate (IR) has no impact on any relationship of this study.

Policy Recommendations

To get more improvement in Banking Lending Growth some recommendations are following:

1 Banks should reduce their NPL to increase their loan growth. For that they should initially book best and quality assets.
2 Banks should take into consideration ROA, ROE while devising lending policies.
3 The increase Gross Domestic Product of the country that will cause growth in lending.

Contribution of study

A lot of works has been done in shape of thesis and article has published already on such type of topics banks internal factors & macroeconomic factors with banks' lending growth. But this study is done differently in a way;

1 The same study has not been conducted in Pakistan,
2 Many Bank specific variables like NPL, ROA, ROE was used together in this study to check their impact on bank lending behavior. All aforesaid variables were not collectively studying before.
3 Macroeconomic variable Gross Domestic Product (GDP) were also used in addition to bank internal factors to use variety of variables to make the study more comprehensive.
4 Interest Rate (IR) was used moderator on the relationship of all Independent variables with dependent variable.

Since no as such comprehensive study was conducted earlier therefore this study is unique in nature in the Pakistani context and using of mixture of such variables with moderator variable.

Research for future:

If anyone wants and have the chance to extend the current study in the future, some suggestions are following;

1 The current study only focused on few bank internal factor like ROA, ROE, NPL and a single macroeconomic factors to check their impact on bank loan growth and the time period was used from 2007-2017. Future researcher may check other Internal and macroeconomic factors impact on bank lending growth.
2 The current study Interest rate was used as moderating variable, other moderating variables may be used in future study.
3 The data for period of 11 years is taken, further research may be done by using more years of different time span.

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