Impact of Profitability on Quantum of Non-Performing Loans

By

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ABSTRACT
Undoubtedly, issue of non-performing loans (NPLs) is vital for banking system since its evolution. It is well-known debate among bankers to mitigate problem of NPLs by different policies and methods. Impact of NPLs has been quantified in this research article with data of sixteen major banks irrespective of size, ownership and functionality from 2006-2012 by using panel fixed effect model. It has been revealed that impact of NPLs on profitability is negative. Performance measures of return on assets and return on equity are negatively affected with increase in non-performing loans while stock return is not affected. Return on assets is influenced more than return on equity because of increase in NPLs. Bank of Punjab is the most effected bank in regard to non-performing loans however MCB has maintained profitability irrespective of bad economic conditions in Pakistan and has limited amount of non-performing loans. Policy suggestions for banks are to make their loan procedures transparent and require hot items as collateral.

KEYWORDS: non-performing loans, profitability, recession, stock return, JEL CLASSIFICATION: G0, G2

INTRODUCTION
Quality of assets in lending technologies is normally measured by the quantum of non-performing loans and has been found a direct and interlinked relationship between both (Kester Guy 2011). The pace and amount of non-performing loans not only disturbs the economic growth but also leads towards financial crises irrespective of growth oriented economies Guy 2011. Financial development and economic growth are most pressing issue now a day’s which give manifold significance to the topic owing to interlink relationship of banking and financial crisis.
Monitoring and management of loans and their recovery is a hot issue in developing countries owing to limited chance of reasonable recovery and utilization of resources. Banks adopt different policies and regulations to meet the target. They devise policies for loan classification and grading to facilitate mass and economy for long run. It is unfortunate to have no efficient international standard or international organization to provide effective ways of recording, accounting and measuring the losses banks face in such a way.

There exist many categories to capture the non-performing loans i.e. pass, special mention, doubtful and loss. These are used with some alteration of terminology but overall concept is same. Non-performing loans mainly consist of three categories i.e. special mention, doubtful and loss and the sum of these accounts is the total amount to check the quality of assets.

There are many factors and reasons which cause and affect the NPLs. Greenidge and Grosvenor, (2010) traced down many factors which impact NPLs i.e. inflation rate of the country, economic growth & targeted growth, interest rate fluctuation along with change in monetary policy etc. Rinaldi at el. (2006) empirically proven inflation and non-performing loans had a positive relationship while Ranjan and Dhal (2003) verified the concept high interest rate in economy increased the value and size of non-performing loans. These reasons are not final but provide theoretical and practical approach for observing and incremental flow of non-performing loans. Some other researchers have given other factors which are taken for determination of quantum of non-performing loans in any economy and must be considered. Herring and Wachter,(1999) gave weightage to the concentration level of loans in sectors and found that high amount in a particular sector magnified quantity of non-performing loans and against the rule of diversification.

**Pakistan industry loans classification?**

During recession when banks are at peak of fragility, non-performing loans get severity with negative symptoms for overall operations of the banks. Amount of non-performing loans is directly tied with economic position of an economy and also affected by the

1 Tightening monetary policy increase interest rate which inflated the size of non-performing loans in Pakistan
Fluctuations in monetary policy. Banking or lending policies are also a prominent reason to increase or decrease the amount of non-performing loans and bank’s relaxed credit policy and uncollateralized loans providing policies aggregate the issue and impact banking profitability negatively which also cause 2Bank run and panic.

Nevertheless in current economic situation, financial sector especially the banking has been threatened with cumulative loan negligence. “A loan is classified as non performing when costs of interest and principal are past due for over 90 days (IMF, 2009)”. Good management practices in banking sector decrease non-preforming loans’ effect particularly in small and large size banks and finding is supported by many researchers (Fama & Jensen, 1983). Another factor that effect quantum of NPLs in banking sector is their legal status or ownership status in economic setup. Government banks and local banks are more prone to this factor than foreign banks (Flamini, 2009) whereas smaller banks have high level of loan defaults (Salas & Saurina, 2002). Njeru (2012) asserts in his research that banks should manage bank specific factors rather macro indicators to control the NPLs.

State Bank of Pakistan, central bank of Pakistan, has adopted best practices to recording and reporting the issue of non-performing loans with in international standards. The bank also classifies the type of non-performing loans and gives detail description about its policies about non-performing loans. SBP has pointed out some reasons that aggregate the worse situation of non-performing loans i.e. political influence, 3markup on marks, limited market value of collaterals, arbitrary charging of interest rates and limited screening process. These reasons have inflated the value of real non-performing quantum and clarity among masses.

Theories of credit risk highly associate occurrence of non-performing loans with external and internal factors. Three theories underpinnings have provided insight into how these factors influence non-performing loans levelsFinancial theory” pioneered by Minsky.

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2 Bank run and banking panic are most significant reason which fosters financial crises in economic setups.

3 Compound interest rate is not applicable in Pakistan by the decision of Supreme court.
1974), also known as financial instability hypothesis and attempted to provide an understanding and explanation of the characteristics of financial crisis.

**LITERATURE REVIEW**

Rajput, GUPTA, and CHAUHAN (2012) have empirically analyzed the profitability of Indian commercial banks by focusing on Non-Performing Assets (NPAs). For this purpose, time series data of public sector banks have been used from financial year 1997-98 to 2009-10. Profitability measure of return on assets has been used as dependent variable while gross and net non-performing assets have been incorporated in the study as explanatory variables. Correlation matrix and ordinary least square regression have been used for analysis of data. Auto correlation in the data has been tested by using D-W test while process of backward elimination has been used to cope with the problem of multi collinearity. Empirical analysis of the data depicted a strong negative relation of gross and net non-performing assets with return on assets. This leads to the conclusion that effective decline in NPAs result in increasing the banks’ profitability.

Any adverse change in the global economic activities is one of the most important risks for bank’s asset quality. Adverse changes in economy contribute to non-performing loans and adversely affect the banks’ performance. This is proved by Beck, Jakubik, and Piloiu (2013) in their study conducted across 75 countries for measuring the macroeconomic determinants of non-performing loans (NPLs). For this purpose, real GDP growth, share price, exchange rate and the lending interest rates have been used as independent variables. Empirical analysis obtained by using fixed effect model and dynamic Arellano-Bond estimations (GMM approach) confirm that GDP growth has negative effect on NPLs and it is the most important driven of NPLs as compared to other macroeconomic factors. Further results depict that share price and exchange rate have negative significant effect while lending interest rate has positive significant influence on NPLs.

Ongore and Kusa (2013) studied the effect of bank specific and economic variables on performance by taking ownership identity as moderating variable. Study has been conducted on 37 banks of Kenya for a period of 10 years from 2001-2010. Performance is measured by return on assets (ROA), return on equity (ROE) and net interest margin (NIM). Bank specific and economic variables used as independent variables and included
capital adequacy (CA), asset quality (measured by non-performing loans-NPLs), management efficiency (ME), liquidity management (LM), gross domestic product (GDP) and average annual inflation rate (INF) while ownership identity has been used as moderating variable. Normality, multi-collinearity and hetero issues were checked and generalized least square (GLS) has been used to cope with the issue of heteroscedasticity. Study revealed strong negative influence of non-performing loans on all three measures of performance. Other bank specific factors of CA and ME also have significant and positive while LM has insignificant positive influence on performance. Further study revealed insignificant relation of GDP while negative significant relation of inflation with performance. Moderating variable of ownership has no significant influence. It is evident from the study that bank specific factors play vital role in performance and among these asset quality is of great concern as poor asset quality or high NPLs adversely affects the bank’s performance.

In another study of Boahene, Dasah, and Agyei (2012), relationship of credit risk with performance has been analyzed by taking six banks in Ghana for a period of 2005-2009. Dependent variable in the study is return on equity while credit risk has been measured by non-performing loan rate (NPLR), net charge-off rate (NCOTL) and the pre-provision profit as a percentage of net total loans and advances (PPPNTLA). Size, growth and total debt ratios have been used as control variable in the study. Based upon result of Hausman test, fixed effect model used to analyze the panel data and results revealed that credit risk, size, growth and debt structure play vital role in banks’ performance. In-depth analysis depicted significant positive relation instead of negative of all the three measures of credit risk with performance meaning by banks in Ghana able to increase their profitability as customers’ default risk increases.

Shingjergji (2013) studied the impact of different bank specific factors on non-performing loans of Albanian banks by taking quarterly data from 2002-2012. Dependent variable used in the study is non-performing loans (NPLs) while independent variables include capital adequacy ratio (CAR), loan to asset ratio (LTA), return on equity (ROE), natural log of total loans, and natural log of net interest margin (NIM). Regression results obtained by using ordinary least square revealed negative insignificant relation of CAR with NPLs. Relation of loan to asset ratio has been found negative but total loans level is positively
influencing the NPLS means increased loans level will result in increased level of NPLs. On the other hand, NIM and ROE are negatively linked with NPLs depicting that high NPLs deteriorate the performance of banks.

Kaaya and Pastory (2013) analyzed effect of credit risk (measured by ratios of non-performing loan, loan loss to gross loan, loan loss to net loan and impaired loan to gross loan) on banks’ performance (measured by return on assets) by controlling the effect of deposits and bank size. A sample of 11 banks in Tanzania has been used for this analysis. According to correlation and regression results, credit risk measures of non-performing loans, loan loss to gross loan, loan loss to net loan have significant negative influence on banks’ performance. It is concluded that performance of banks can be increased by effective risk management as it help to reduce non-performing loans and loan losses.

Kolapo, Ayeni, and Oke (2012) also analyzed the influence of credit risk on performance of five banks in Nigeria by taking data from 2000-2010. Credit risk is measured by taking ratio of non-performing loans to loans plus advances, total loans to advances plus deposits and ratio of loan loss provisions while performance is measured by return on assets. Fixed effect model used in the study and according to results of regression analysis, non-performing loans and loan losses provisions are adversely affecting the performance while total loans to advance plus deposit ratio has positive significant effect on the performance. This is evident form the study that banking industry needs to improve their loan administration processes for maximization of profits.

Mohammed (2012) studied the bank performance in context of corporate governance for which mainly the ratios of non-performing loans and loan deposits have been used. Study was conducted on 9 banks of Nigeria for a period of 10 years from 2001-2010. According to generalized least square regression results, non-performing loans ratio has significant negative effect while loan deposit ratio has insignificant negative effect on performance. So, survival of banks is strongly dependent upon the better asset quality means dependent upon minimizing the non-performing loans ratio.

Banks with less diversified loan portfolio have better asset quality (i.e. reduced non-performing loans) and consequently have the better performance. This is because in
concentrated loan portfolio, banks have better monitoring efficacy as they may have the expertise in the areas they lend (Tabak, Fazio, & Cajueiro, 2011). Loan portfolio and its management are crucial for banking industry because these assets are main source of income generation and are considered vital in determining the performance of banks. In this regard, Vatansever and Hepsen (2013) investigated the presence of any significant relation (if exists) of non-performing loans with macroeconomic indicators, global and bank level factors in Turkey for a period of January 2007 to March 2013. Results obtained from ordinary least square regression helped in categorizing the factors significantly affecting the non-performing loans. Among various macroeconomic, global and bank level factors used in the study, only the variables of industrial production index, Istanbul stock exchange 100 Index, inefficiency ratio of all banks have significant negative effect while unemployment rate, ROE and capital adequacy ratio have positive significant effect on non-performing loans.

Warue (2013) also investigated that how much macroeconomic and bank specific factors are contributing in non-performing loans because presence of high level of non-performing loans deteriorates the investments and banks’ performance. Study has been conducted by taking sample of 44 banks in Kenya from the period of 1995-2009. A fixed effect panel data approach has been used while banks have been categorized in small, medium and large levels for robust analyses. Bank specific factors used in the study include ownership, size, return on capital employed (ROCE) and return on assets (ROA). Macroeconomic factors include real GDP, GDP per capita, lending interest rates, real interest rate, interest spread and inflation. Results of the study depicted that improving bank specific factors leads to minimize the non-performing loans while increase in macroeconomic factors leads to increase the non-performing loans. It is evident from the study that bank specific factors contribute to non-performing loans more strongly as compared to macroeconomic factors used in the study. That is why, effective management of bank specific factors is very crucial for banks in reducing the non-performing loans.

**METHODOLOGY**

Studies for empirically analyzing the influence of non-performing loans on banks’ performance are scanty. This research has been conducting with the aim to fill this gap in this vital area of study.
Data of one business cycle of sixteen Pakistani banks have been collected from 2006 to 2012. Panel is comprises of sixteen major banks of Pakistan irrespective of status. The sample is comprised of public and private banks with different sizes. Complete list of these banks is provided in appendix. It has been mentioned by well-known author Baltagi (2005) that short panel data has not rigorous, hard and fast requirements for testing of assumptions. Heteroskedasticity and autocorrelation may be compromised and results are considered better in noncompliance of these assumptions. Major research technique used in the study is fixed effect model, which is decided upon the basis of Hausman test. Before finalizing the model, random and fixed effect models have been run and fixed has been selected based upon the results.

**THEORETICAL FRAMEWORK**

Figure: 1 Theoretical Framework

Three models have been adopted to check the relationship between profitability and non-performing loans. These models have been further categorized into market profitability and accounting profitability.

Model one represents return on asset as dependent variable while non-performing loans as independent variable.

\[
ROA_{it} = NPA_{it} + \epsilon_{it}
\]

Where

ROA = return on assets
NPA = non-performing loans
\(\epsilon\) = error term

Model two represents return on equity as dependent variable while non-performing loans as independent variable.

\[
ROE_{it} = NPA_{it} + \epsilon_{it}
\]
ROE = return on equity  
NPA = non-performing loans  
e = error term

Model three represents stock return as dependent variable while non-performing loans as independent variable.

\[ SR_{it} = NPA_{it} + \varepsilon_{it} \]

SR = stock return  
NPA = non-performing loans  
e = error term

**HYPOTHESIS OF THE STUDY**

Non-performing loans has no impact on return on asset  
H0 = ROA = 0  

Non-performing loans has no impact on return on equity  
H0 = ROE = 0

Non-performing loans has no impact on stock return  
H0 = SR = 0

**OBJECTIVE OF THE STUDY**

- To determine impact of non-performing loans on profitability of Pakistani Banks  
- To trace impact of non-performing loans on market return

**LIMITATION OF THE STUDY**

Every study has certain limitation as this also has. Unfortunately, data of non-performing loans in Pakistan is available from 2006 to 2012. Short panel is also another limitation of the study. Long panel may give the better and more generalization of result which is not easily possible in this study

**Empirical results**

Hasuman test measures time invariant specific characteristics of data or entity. Its unique error term is not correlated with other entity and the p value of hausman test provides solid foundation to pick the fixed effect model. Fixed effect model presents the net effect of dependent and independent variables and control those time invariant characteristic.
Table 1: Impact Of Non-Performing Loans On Return On Assets

\[ \text{. xtreg roa npa,fe} \]

Fixed-effects (within) regression

<table>
<thead>
<tr>
<th></th>
<th>Number of obs = 112</th>
<th>Number of groups = 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-sq: within</td>
<td>0.1734</td>
<td>Obs per group: min = 7</td>
</tr>
<tr>
<td>between</td>
<td>0.0085</td>
<td>avg = 7.0</td>
</tr>
<tr>
<td>overall</td>
<td>0.0121</td>
<td>max = 7</td>
</tr>
<tr>
<td>corr(u_i, Xb)</td>
<td>-0.3832</td>
<td>F(1,95) = 19.93</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prob &gt; F = 0.0000</td>
</tr>
</tbody>
</table>

|         | Coef.   | Std. Err. | t       | P>|t| | [95% Conf. Interval] |
|---------|---------|-----------|---------|------|---------------------|
| roa     | -5.27e-08 | 1.18e-08  | -4.46   | 0.000 | -7.61e-08 to -2.93e-08 |
| npa     | 1.438269  | 0.2461703 | 5.84    | 0.000 | 0.9495595 to 1.926979 |
| _cons   | 1.9024646 | 1.3643767 | 1.40    | 0.165 |                      |

|         | Coef.   | Std. Err. | t       | P>|t| | [95% Conf. Interval] |
|---------|---------|-----------|---------|------|---------------------|
| sigma_u | 1.9024646 | 1.3643767 | 1.40    | 0.165 |                      |
| sigma_e | 0.66036138 | (fraction of variance due to u_i) |
| rho     | 0.1926979 |           |         |      |                     |

F test that all u_i=0: \[ F(15, 95) = 11.61 \] \[ Prob > F = 0.0000 \]

Goodness of the fit of model 1 tells us that non-performing loan captures 17% variation in return on asset of banking sector if rest of other factors excluded from the model. Rho tells us that 66% variation is due to entity specific characteristic of banks in the sample. Two sided t-test has been applied to reject the hypothesis and p value of the test gives us hint to reject the null hypothesis at higher level of significance. Standard error of the variable is also in feasible range and presents a better analysis picture. It has been quantified that profitability and non-performing loans have negative relationship. One thousand increases in non-performing loans may decrease the profitability up to 0.00527 %.

Moreover, other type of analysis has been performed with the help time dummies. It has been witnessed that in 2007 and 2008 this relationship is negative and significant compared to base year 2006. The major reason of this change is owing to bitter symptoms of recession and tight monetary policy in this period. Other year are statistically insignificant owing to in stabilization in economy, change of government and incentive and credit policies of government. Output of this analysis has been provided in Table 7 of appendix.
Goodness of the fit of model 2 tells us that non-performing loan captures 40 % variation in return on asset of banking sector if rest of other factors excluded from the model. Rho tells us that 85 % variation is due to entity specific characteristic of banks in the sample. Two sided t test has been applied to reject the hypothesis and p value of the test gives us hint to reject the null hypothesis at higher level of significance. Standard error of the variable is also in feasible range and presents a better analysis picture. It has been quantified that profitability and non-performing loans have negative relationship. One thousand increases in non-performing loans may decrease the profitability up to 0.00371%.

Other type of analysis has been performed with the help time dummies. It has been witnessed that in 2007 to 2010 this relationship is negative and statistically significant compared to base year 2006. The major reason of this change is owing to bitter symptoms of recession and limited profitability of banking sector. Output of this analysis has been provided in Table 8 of appendix.

Model 3 reveals that stock returns and non-performing loans have no significant relationship and no room for generalization of results is possible on this finding.

Table 3 Descriptive Analysis of Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17763219</td>
<td>12014801</td>
<td>77393928</td>
<td>108699</td>
<td>1.532</td>
<td>5.06</td>
</tr>
<tr>
<td></td>
<td>0.50</td>
<td>1.07</td>
<td>4.06</td>
<td>-7.61</td>
<td>-1.525</td>
<td>5.357</td>
</tr>
<tr>
<td></td>
<td>14.22</td>
<td>11.405</td>
<td>45</td>
<td>0</td>
<td>0.359</td>
<td>1.97</td>
</tr>
<tr>
<td></td>
<td>0.20</td>
<td>0.16</td>
<td>1.88</td>
<td>-0.86</td>
<td>0.522</td>
<td>2.84</td>
</tr>
</tbody>
</table>

Published by: Modern Rohini Education Society | Paper Id: 04302
Muslim Commercial Bank has got highest level of profitability in context of ROA and ROE during 2006-2007 while KASB bank and SILK bank have lowest profitability ratio in ROA and ROE respectively.

Figure: 3 Ranking of Top Five Banks Profitability and Non-Performing Loans

Above graph gives us sound information about the ranking of Non-performing loans and profitability. Top bank is J.S bank which have lowest amount of non-performing loans nevertheless MCB is number one bank of Pakistan in regard to profitability. It has been further calculated smaller banks have lower level of Non-performing loans during the period so the ranking in this regard is not accurate.

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4 This ranking is based upon 25% probability to each variable under study. So the ranking has better rationale and the aggregation of all measure of profitability and quantum of non-performing loans.
CONCLUSION

How extensively NPLs disturb the profitability of bank is issue of every financial institution, which is involved in lending activity. State Bank of Pakistan has determined some reasons which intensify this issue i.e. marks up on mark up, embezzlement in amount, wrong calculation procedures and divergent practices in calculating amount of NPLs. This panel study based on sixteen banks of Pakistan from 2006-2012 and validate many previous studies. Profitability is classified into two broader categories, one is accounting or firm based profitability measures whereas other involves market related measure. Model 1 & 2 reveals that non-performing loans negatively affect the return on asset and return on equity of banks. Stock returns are not affected by the quantum of non-performing loans because it is market related behavior which is not totally based on fundamental analysis. During 2007 to 2009 this effect is negative compared to base year 2006 owing to bitter symptoms of recession and tight monetary policy in this period.

REFERENCES


