



## DOES THE LOAN LOSS PROVISION AFFECT THE BANKING PROFITABILITY IN CASE OF PAKISTAN?

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### ABSTRACT

*This paper examines the impact of loan loss provisions of the banks on the performance of the banks operating in Pakistan. Moreover the other factors that affect the banking profitability have been discussed in this study. Our results show that the loan loss provision of the banks is of paramount importance in affecting its profitability. A well-managed bank is perceived to be of lower loan loss provision and such an advantage will be translated into higher profitability. In addition, banks advances and deposits which represent the vital role for the determination of banking profitability. Finally, with regard to non financial variable, political instability in the previous period has more significant effect on the present banks profitability rather than the political instability at present period.*

**Key Words:** Banks, Profitability, Return on Assets, Loan Loss Provision, Correlation, Fixed & Random Effect, Pakistan.

### INTRODUCTION

Banking has long been recognized as an important factor in economic development. Historically, economists focused much on this sector. Walter Bagehot (1873) and Joseph Schumpeter (1911) emphasized the critical importance of banking system in economic growth and highlighted the

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circumstances when banks actively spur innovation and future growth by identifying and funding productive investments. Joan Robinson (1952) argues that banks respond passively to economic growth. It has important implications for the growth and development of the emerging economies, as numerous authors suggest critical link between the efficiency of bank intermediation and economic growth. Quaden (2004:2), for example, argues that a more efficient banking system benefits the real economy; therefore the key variable in financial system is the profitability.

Loan-loss provisioning policy is critical in assessing financial system stability, in that it is a key contributor for fluctuations in banks' profitability and capital positions, which has a bearing on banks' supply of credit to the economy (Beatty and Liao, 2009). In principle, loan loss provisions allow banks to recognize in their profit and loss statements the estimated loss from a particular loan portfolio(s), even before the actual loss can be determined with accuracy and certainty as events unfold and are actually written off. In other words, loan-loss reserves should result in direct charges against earnings during upturns in the economic cycle, as banks anticipate future losses on the loan portfolio when the economy hits a downturn. When these anticipated loan losses eventually crystallize, banks can then draw on these reserves, thereby absorbing the losses without impairing precious capital and preserving banks' capacity to continue extending the supply of credit to the economy.

Ideally, the level of loan loss provisioning, should be able to reflect the beliefs of bank management on the quality of the loan portfolio that they have, indicating that provisions should be able to cover the whole spectrum of expected credit losses if they are to think of provisions as a measure of true credit risk (Dugan, 2009).

For another, accounting frameworks only allow provisioning for losses that have already been incurred as of a financial statement date, which does not really address the concept of "expected losses" (Li, 2009). Moreover, a surplus of funds relative to the appropriate level of prudent loans being granted could lead to the chasing of yields and the lowering of credit risk perception, and hence, corresponding provisions. If provisions are not able to cover the whole spectrum of potential loan defaults once an economic downturn occurs, then, naturally, the bank will need to cover the excess loss from its capital.

*Source: Author's Calculation*

The graphical formation of the loan loss provision ratio describes the marginal downward trend in the year 2003 but gradually have an upward trend after the year 2006 which defines the alarming situation for the bank's profitability.

The remaining sections of this paper is organized as follows: Section 2 reveals the related review of literature, section 3 explains methodology and econometric model Section 4 explains data and definition of variables, section 5 explains empirical results and section 6 presents the conclusion.

## **REVIEW OF LITERATURE**

This section is concerned with the review of previous studies regarding the determinants of profitability. Most of the previous studies divide the factors of profitability into two categories i.e. internal factors and external factors. Since this study is major concerned with the internal factor like loan loss provision therefore the documentation of previous studies has been made regarding both factors of profitability.

Samy Ben Naceur (October 2003), using bank level data for Tunisia in the 1980-2000 period, provide statistics on size and decomposition of bank's interest margin and profitability. The paper uses regression analysis (panel data with random effects) to find the underlying determinants of Tunisian banking industry performance. To this end, a comprehensive set of internal characteristics is included as determinants of bank's net interest margin and profitability. In his study he found that bank loans have a positive and significant impact on profitability. The size has mostly negative and significant coefficients on the profitability. This latter result may simply reflect scale inefficiencies. While the study by Abreu and Mendes (2000) documents a positive relationship between the loan ratio and profitability. Bashir & Hassan (2003) and Staikouras & Wood (2003) show that a higher loan ratio actually impacts profits negatively. The latter study notices that banks with more non-loan earnings assets are more profitable than those that rely heavily on loans.

Pilloff and Rhoades (2002) discuss the positive relationship of the size with bank's profitability. The bank-size also affected by the operating efficiency. Molyneux and Seth (1998); Ramlall (2009); Sufian(2009) found the positive relationship of banks size with banks profitability and examine that bank size depends the economies of scale because the larger banks were more profitable than smaller banks, Whereas the empirical evidence also discuss the negative relationship of bank size with profitability (Koasmidou, 2008; Spathis, Koasmidou & Doumpos, 2002). Demirguc-Kunt and Maksimovic (1998) identified a positive relationship between size and profitability. They found that higher the funds can easily meet their rigid capitals so that they can have extra funds for giving loans to borrowers and thereby increase their profits and earning levels.

Ramlall (2009) & Miller and Noulas (1997) stated the negative relationship between credit risk and profitability. It shows that whenever there is negative relationship between them, then it signify that greater risk linked with loans, higher the level of loan loss supplies which thereby and create a trouble at the profit-maximizing strength of a bank.

Vong & Chan (2005) conducted a research on determinants of banking profitability in which the bank-specific variables examined, with a sample of five different banks. He found that a higher loan-to-total assets ratio may not necessarily lead to a higher level of profits. Due to the competitive credit market condition and the successive cuts in interest rate, the interest spread, i.e. the important determinant of profitability, becomes narrower. A lower spread together with a higher loan-loss lead to lower profitability. Therefore, instead of loan size, it is the spread and the quality of the loan that matter. Lastly, his study shows that smaller banks, on average, achieve a higher return on assets than larger ones.

Naceur and Goaied (2001) find out the factors that affects the Tunisian bank’s performances during the period 1980-1995. They determine that the best developing banks are those who have effort to get better labor and capital productivity, those who have balanced a high level of deposit accounts comparative to their assets and finally, those who have been able to strengthen their equity for the banks performance. Chirwa (2003) determines the relationship between market structure and profitability of commercial banks in Malawi by using time series data during 1970 and 1994. He finds a long-run relationship between profitability and concentration, capital asset ratio, loan-asset ratio and demand deposits-deposits ratio.

Bashir (2000) analyzes the factors of Islamic bank’s performance across eight Middle Eastern countries for 1993-1998 periods. A various number of internal and external determinants were used to forecast the profitability and efficiencies. Controlling for macroeconomic environment, financial market situation, the consequences show that higher leverage and large loans to asset ratios, lead to higher profitability. He also reports that foreign-owned banks are more profitable than the domestic one. Ataullah et al. (2004) made a comparative analysis of commercial banks in India and Pakistan during 1988-1998. They found that the efficiency score in loan based model was much higher as compared to the income based model. Both countries banks have needed to improve their efficiency.

The above discussion confirms a strong linkage between bank specific & non bank specific factors and bank’s profitability. The paper addresses the gap in the literature by using challenging econometric techniques to testify the bank’s profitability in terms of the individual banks operating in Pakistan. According to the nature and purpose of each study mentioned in literature review, a number of explanatory variables have been proposed for bank specific and non bank specific determinants of bank’s profitability. We have taken loan loss provisions to total assets (*LLP\_TA*); current liabilities to total assets (*CL\_TA*); Natural log of total assets (*SIZE*); advances to total assets(*ADV\_TA*); deposits to total assets (*DEP\_TA*); current assets to total assets (*CA\_TA*) and political instability (*PII*) factor separately.

## METHODOLOGIES AND ECONOMETRIC MODEL

### Econometric Approach

The present study use panel data, which has the advantage that certain effects which may not be observable in pure time series data can be detected and measured (Gujarati, 2003). The current study presents an opportunity to compare the merits of alternative panel regression approaches as applied to the analysis of banking profitability in Pakistan. This study tests a number of panel data models including the fixed effects model (FEM) and random effects model (REM). In the pooled regression model all coefficients are constant across time and individuals. In general, the pooled model is:

$$Y_{i,t} = \beta X_{i,t} + u_{i,t} \quad i = 1 \dots N, \quad t = 1 \dots T \dots\dots\dots(1)$$

Where  $u_{i,t}$  is independently and identically distributed (*i.i.d*). A limitation of pooled regression is that the specific nature of each cross section is ignored. This can be addressed using a Fixed Effects Model (FEM), where the specification includes a unit specific component:

$$Y_{i,t} = \beta X_{i,t} + \gamma Z_{i,t} + u_{i,t} \quad i = 1 \dots N, t = 1 \dots T \dots\dots\dots (2)$$

Where  $Z_{i,t}$  is unobserved, and  $X_{i,t}$  and  $Z_{i,t}$  are correlated. However a drawback of the FEM specification may be that the time invariant effects and their coefficients fall out and cannot be identified. To take into account the individual specific components, we can use the Least Squares Dummy Variable (LSDV) methodology. This means  $Z_{i,t}$  can be interpreted as an intercept of observation  $i$  by including a dummy variable for each cross-section unit. That is, we have:

$$Y_{i,t} = \alpha_1 + \alpha_2 D_2 + \dots + \alpha_N D_N + \beta X_{i,t} + u_{i,t} \dots\dots\dots (3)$$

In the LSDV approach, unobserved time effects are obtained by including time dummies and the variables are homogeneous across cross-sections but differential through time. Both cross-section and time dummy variables may be included if the intercept varies over individuals as well as time. Alternatively, time invariant factors can be incorporated using the Random Effects Model (REM). Consider the model again:

$$Y_{i,t} = \alpha + \beta X_{i,t} + \gamma V_i + u_{i,t} \quad i = 1 \dots N, t = 1 \dots T \dots\dots\dots (4)$$

In (4)  $\alpha$  represents the mean value of all the cross-sectional intercepts and the error component  $V_i$  represents the deviation of the individual intercept from the mean value. The individual error components are assumed to be uncorrelated with each other and are not auto-correlated across cross-section units. Therefore, the random error  $V_i$  is homogeneous over time but different across cross sections. An advantage of the REM model is that time-invariant factors are included in the regressions.

**Econometric Model**

To test the impact of financial and non-financial factors, especially the loan loss provisions, on the banking profitability, this study estimate a linear regression model in the following form:

$$\dots\dots\dots (5)$$

Where  $Y_{i,t}$  is the profitability of bank  $i$  for period  $t$ ;  $\alpha$  is the regression constant;  $LLP_{it}$  represents the loan loss provisions;  $X_{i,t}$  vectors of financial and determinants;  $PII_{i,t}$  explain the political instability and  $v_{it} = v_j + \epsilon_{jt}$  is the disturbance, with  $v_j$  the unobserved bank-specific effect, and  $\epsilon_{jt}$  the idiosyncratic error.

Where

$LLP_{TA}$ : Loan loss provision/Total Asset

$CL_{TA}$ : Current Liabilities/ Total Asset

SIZE: Log of Assets,

$ADV_{TA}$ : Advances/ Total Assets,

$DEP_{TA}$ : Deposits/ Total Assets

$CA_{TA}$ : Current Assets/Total Assets

and

PII: Political Instability.

## DATA AND DEFINITION OF VARIABLES

### Data

The present study uses annual panel data of fifteen schedule banks<sup>4</sup>, operating in Pakistan during the period 2001–2009. All bank balance sheets and income statements have been obtained from “Banking Statistics of Pakistan” annually published by State Bank of Pakistan (SBP) and provide uniform information on financial statements of banks operating in Pakistan. To capture the political interference on the banking profitability “Polity Index (PI)” is used, obtained from the Centre for Systemic Peace (CSP)<sup>5</sup>.

### Definition of Variables

There are different financial and non-financial factors based on theory and the literature affecting the banking profitability. Present study has employed some of those factors to find the influence on banking profitability. More specifically on the basis of theory and literature the variables like Loan loss provision, Current Liabilities, Taxes, Size of banks, Advances, Deposits, current assets and Political Instability are employed in present estimation, explained below as:

*Return on Asset (ROA)*: The ROA is an important indicator of bank’s profitability. It is calculated by dividing net income after tax to total assets. ROA shows the profit earned per dollar of assets which reflects bank’s management ability to utilize the bank’s financial and real investment resources to generate profits [see Ben Naceur (2003) and Alkassim (2005)].

*Loan loss provision ( $LLP_{TA}$ )*: The proxy used for this variable as loan-loss provisions over total loans. It is a measure of capital risk, as well as credit quality of banks. If banks operate in more risky environments and lack the expertise to control their lending operations, it will probably result in a higher loan-loss provision ratio to cover this risk. Hence, the ratio is expected to have a negative relationship with profitability.

<sup>4</sup> Selected on the basis of Absolute Liquid Ratio (ALR) standard i.e. [0.5:1]

<sup>5</sup> Virtual Library linked is <http://www.systemicpeace.org/inscr/inscr.htm>

*Current Liabilities ( $CL_{TA}$ ):* The ratio of current liabilities to total assets has been used to find the impact of current liabilities on the banking profitability. We find clear evidence of a positive association between the ratio of current liabilities to total assets and profitability as measured by return on assets (ROA).

*Size ( $SIZE$ ):* The total assets determine the size of a bank. We use size of the bank in this study, as an independent variable, which account for size related economies and diseconomies of scale. In most of the finance literature, the total assets of the banks are used as a proxy for bank size. Moreover the dependent variable “ROA” shows the profitability in accordance to the assets of the bank therefore it is appropriate here to use assets of bank for determining size of bank. Here we used the logarithmic form of assets to determine size of bank and it has expected positive sign.

*Advances ( $ADV_{TA}$ ):* It is explained by total advances divided by total asset, helps to measure income source and measures the liquidity of bank assets tied to loans.  $ADV_{TA}$  is included in the study as an independent factor to determine the impact on banks’ profitability and it has expected positive sign.

*Deposits ( $DEP_{TA}$ ):* The ratio of deposits to total assets is a good liquidity indicator but is considered as a liability. Deposits are the main source of funds of bank which it uses to give loans and hence it has a positive impact on the profitability of the banks.

*Current Assets ( $CA_{TA}$ ):* To capture the effect of current assets on the banking profitability, we have used the ratio of current assets to the total assets. If it is high then it shows good solvency position of the bank but it also means those banks has retained its current assets and are not utilizing it for further investment purposes in the business. So it is expected that there will be negative relation between this ratio and profitability of bank.

*Political Instability ( $PII$ ):* To analyze the political factor impact on banking profitability, present study employ polity index denoted as PII where the polity index values have a spectrum on a 21 point scale ranging from -10 (strong autocracy) to +10 (strong democracy). The trend of polity score from -10 to +10 determine that economy moves toward the democracy and it may a significant role in declining the banking profitability. In this study this factor has expected a negative sign.

## EMPIRICAL RESULTS

In empirical results the correlation matrix (Table#01) describes that there is no any multicollinearity problem exist in our data. It implies that the explanatory variables employed in the regression model do not have stronger relation among each other, and they have more direct influence only on the dependent variable (ROA).

To check the smoothening of the data used for the different employed variables, Table#02 describes that there is not any outlier exists in our data. It reviles that heterogeneity is not present in

this analysis. Also the Durbin-Watson value ( $D.V \approx 2$ ) describe that there is no autocorrelation in the existing date.

**Table-01. Correlation Matrix**

	ROA	LLP_TA	CL_TA	SIZE	ADV_TA	DEP_TA	CA_TA	PII	PII(-1)
ROA	1	-0.653	0.052	0.285	0.327	0.286	0.166	-0.222	-0.228
LLP_TA		1	0.009	0.087	0.181	0.037	-0.095	0.515	0.156
CL_TA			1	0.002	0.172	-0.032	0.138	-0.120	0.108
SIZE				1	0.585	0.309	-0.010	0.278	-0.053
ADV_TA					1	0.510	0.068	0.223	-0.143
DEP_TA						1	0.460	-0.029	0.004
CA_TA							1	-0.179	-0.050
PII								1	0.202
PII(-1)									1

As mentioned in Table#03, the regression analysis of the model shows that the employed variables are 86 percent explaining the banking profitability. Among the financial determinants, the  $LLP_{TA}$ ,  $ADV_{TA}$  and  $DEP_{TA}$  variables show a significant role for the determination of bank's profitability.

**Table-02. Descriptive Statistic**

	ROA	LLP_TA	CL_TA	SIZE	ADV_TA	DEP_TA	CA_TA	PII	PII(-1)
Mean	0.011	0.010	0.126	7.999	0.518	0.831	0.151	-1.75	-3.125
Median	0.013	0.006	0.121	8.066	0.535	0.795	0.142	-5	-5
Maximum	0.050	0.103	0.256	8.914	0.933	1.796	0.319	5	5
Minimum	-0.071	-0.003	0.035	6.606	0.103	0.606	0.077	-6	-6
Std. Dev.	0.017	0.015	0.045	0.564	0.149	0.195	0.047	4.567	3.936
Observations	120	120	120	120	120	120	120	120	120



More specifically by obeying the economic theory the  $CL_{TA}$  has positive<sup>6</sup> but statistically insignificant relationship with the  $ROA$ . The loan loss provision is found to have negative and statistically significant affect at 1% level of significance. The negative and significant association of loan loss provision with profitability is supported and in accordance with Ramlall, (2009); Vong, (2005); Miller & Noulas, (1997) and Sufian & Habibullah, (2009). It reveals that the major portion of banks operations are involves in borrowing and advancing activities due to banks face threats of high credit risk and they create a loan loss provisions to lessen the risk. This risk adverse policy of banks leads towards decrease in profitability, because there are two major reasons behind it first, according to accounting principles the loan loss provisions are created from earnings of banks on annual basis. Second, banks tends to be more profitable when they are able to undertake more lending activities if a higher level of provision is maintained then bank's ability to give loan will decrease and thus depresses banks' return on asset significantly (e.g. Anna P. I. Vong (2005).

Since the bank  $SIZE$  plays an important role to maintain the position of a bank in the market in which it is operating nevertheless the relation of bank size is found to be insignificant but positive with profitability. The positive relation of size with profitability is consistent with Hauner, (2005); and Akhtar, Ali, & Sadaqat, (2011). Results also describe that  $ADV_{TA}$  has positive and significant relation with profitability of the banks. This indicates that due to the large amount of advances loans, chances of return on assets will be high due to high interest earnings on these advances, which are added in the profits of banks. This positive relation is consistent with Athanasoglou et al. (2006) and Saira Javaid et al. (2011).  $DEP_{TA}$  is describing the negative association with profitability of banks in Pakistan this negative correlation is an indication of high competition in market due to which banks have to give higher interests on deposits to attract depositors. This ultimately reduces profits of banks (e.g. Antonina Davydenko (2010)). Also obeying the theory,  $CA_{TA}$  has the negative association with the banking profitability but statistically insignificant.

**Table-03. Regression Analysis of the Model**

Variable	Fixed Effect Model	Random Effect Model
<b>Intercept</b>	0.044 (1.098)	-0.014 (-0.541)
<b>LLP_TA</b>	-0.807 (-12.150)*	-0.848 (-13.515)*
<b>CL_TA</b>	0.029 (1.202)	0.009 (0.472)
<b>SIZE</b>	0.000 (0.052)	0.001 (0.504)
<b>ADV_TA</b>	0.059 (7.040)*	0.056 (7.220)*

<sup>6</sup> The sign is negative in the fixed effect model.

<b>DEP_TA</b>	-0.065 (-4.009)**	-0.014 (-1.558)***
<b>CA_TA</b>	-0.014 (-0.615)	-0.001 (-0.087)
<b>PII</b>	-0.050 (-1.748)***	-0.0008 (-2.659)**
<b>PII(-1)</b>	-0.010 (-2.640)**	-0.0009 (-2.903)**
<b>R-squared</b>	0.859	0.719
<b>Durbin-Watson stat</b>	1.675	1.434
<b>F-statistic</b>	26.891	35.572

Note: \*, \*\* and \*\*\* represent that the results are statistically significant at 1%, 5% and 10% level of significance respectively

The significant negative correlation between political instability and the banking profitability describes that the autocratic/democratic trend in the Pakistan describe significant role to increase/decrease the banking profitability in Pakistan respectively. But fortunately the autocratic/democratic trend in the one year last period has more significant role as compare to the present trend for the determination of present banking profitability in Pakistan.

## CONCLUSION

It is generally agreed that a strong and healthy banking system is a prerequisite for sustainable economic growth of any country. Banks in Pakistan have been undergoing major challenges in the dynamic operating environment over the past decade. In order to withstand negative shocks, high level of uncertainty in the economy of Pakistan and maintain financial stability, it is important to identify the determinants that mostly influence the overall performance of banks in Pakistan.

In the first place, we have examined the financial structure variables affecting the banking profitability in Pakistan. Banks with less loan loss provision are perceived to have more safety and such an advantage can be translated into higher profitability. On the other hand, our results reveal that a higher advances-to-total assets and deposits- to- total assets ratios necessarily affect the level of banks' profit. In the second place concerning the non financial variable, political instability plays an important role in explaining the banks' return on assets. The negative relationship between political instability and bank performance suggests that the competition will generate in the bank's market with the democratic trend exist in the economy.

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