Credit Risk, Capital Adequacy and Bank's Performance: An Empirical Evidence from Pakistan

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Abstract

Credit risk is one of the major risks in banking operations nowadays. For sustainable financial performance, credit risk management is of crucial importance. Non-performing loans are the major element of credit risk that negatively affects the banking performance. To cater such risk, banks have to maintain certain percentage of capital as cushion with central bank as per BASEL requirements. Efficient credit risk management contributes positively towards banking profitability. This study aims to investigate; how credit risk and capital adequacy affects the performance of commercial banks in Pakistan. This study identifies the exposure of Pakistani commercial banks towards credit risk and impact of credit risk management practices for 6 years. The findings of this study help the risk managers to ensure prudent credit risk management practices that will help in reducing non-performing loans and improving banking performance.

Keywords: Credit Risk, Credit Risk Management, Capital Adequacy, Non-performing Loans

1. Introduction

Financial institutions especially banks are the main pillar of financial system of any economy. A healthy financial system improves the economic development and for that banks are required to have an effective risk management. Banks face various financial and non-financial risks in their operations; among all these risks credit risk is the major risk that directly affects the banking performance as it is related to its core operation i.e. lending. Better banking performance is an indicator of efficient utilisation of resources and a vigilant risk management that enhances customers' confidence towards their deposits safety and the repayment ability of banks.

Banks need to have adequate capital as a cushion to absorb losses caused by different risk and to increase the depositors' trust on banks and ultimately profitability of the banks (Olalekan and Adeyinka, 2013). But maintaining capital adequacy ratio above an optimum level can harm the profitability (Poudel, 2012). Capital adequacy not only improves the performance of banks but also used as credit risk mitigation technique (Ogboi and Unuafe, 2013)Finance and Banking</secondary-title></titles><periodical><full-title>Journal of Emerging Issues in Economics, Finance and Banking</full-title></periodical><pages>703-717</pages><volume>2</volume><number>3</number><dates><year>2013</year></dates><urls></urls></record></Cite></EndNote>. Effective credit risk management is important for smooth functioning and profitability of banking sector that leads towards healthy financial system and growing economy. The importance of credit risk management and capital adequacy for the financial institutions has been emphasized by BASEL II. Banks are now keen towards credit risk management to improve their performance in specific and for the overall financial sector survival in general.

Credit risk has been defined in literature in different ways. Fredrick (2012) and Kaaya and Pastory (2013) defined credit risk as borrowers' inability to meet its financial obligation towards bank as per specified terms and conditions and Nawaz *et al*. (2013) explained credit risk as risk of failure on part of borrower to meet terms of line of credit with bank. Considering the importance of credit creation process for the survival; credit risk management is inevitable for long term success and for the reduction of losses of default. Credit risk can affect the performance in either positive or negative way. Banks

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require an integrated credit risk management to mitigate risk inherited with individual credits as well as for the portfolios. Effective and sound credit risk management requires proper identification, measurement, monitoring, and mitigation of sources of the risk; ensuring the capital adequacy as well (Kaaya and Pastory, 2013; Musyoki and Kadubo, 2012; Nawaz *et al*., 2013).

Various studies have been conducted to explore the relationship between credit risk and performance of banks and mixed results (positive, negative or insignificant) have been reported by these studies(Boahene, Dasah, and Agyei, 2012; Kaaya and Pastory, 2013; Musyoki and Kadubo, 2012; Nawaz *et al*., 2013; Ogboi and Unuafe, 2013). The results of these studies signify the importance of credit risk management for the ultimate objective of banks i.e. profitability. Banks need a sound credit risk management system for the efficient functioning and for the long term sustainability in financial system.

Considering the importance of capital adequacy and credit risk management for the performance of banks, this study aims to explore the impact of capital adequacy and credit risk on the performance of commercial banks in Pakistan.

1.1. Contribution of the Study

The findings of study are helpful for the risk managers in effective credit risk management through understanding the important determinants of credit risk and the role of capital adequacy for the performance. The results act as guidelines for the regulators to set the benchmarks for capital adequacy ratios and for developing credit risk management framework. The study also helps the investors to have a look on capital adequacy and credit risk management of banks before depositing their resources.

1.2. Objectives of the Study

i. To determine the impact of credit risk determinants on the performance of banking companies.
ii. To determine the impact of capital adequacy ratio on performance of banking companies.

This paper is organised as follows: section 1 represents introduction, contribution and objectives of the study; section 2 is about literature review; section 3 consists of research methodology, variables used and model specification of the study; section 4 represents results of the data analysis, and in section 5 final conclusion and policy recommendations are discussed.

2. Literature Review

This section includes the review of studies that have been conducted to check the relationship between credit risk and bank's profitability. Banking has evolved over the years because of increased competition, technological advancements, new products and increased demands of customers. But despite such advancements, banking sector has to face lots of difficulties in its daily operations. Banks have to face both financial and non-financial risks in current uncertain environment and such risksare the threatsfor the banks if not managed properly.

Different studies have been conducted by the researchers to check the impact of capital adequacy and credit risk on bank's performance.Ali, Akhtar, and Sadaqat (2011) conducted a study on financial and non-financial risks perspectives in banking sector of Pakistan. Results showed that most significant and positive relationship is found between bank size and credit and operational risk. Other variables i.e. operating efficiency, non-performing loans, and operational risk have significant but negative relationship. Gearing ratio has significant and negative relation with operational risk whereas it has insignificant relationship with credit risk in banks.

Same results have also been proved by Ahmed, Akhtar, and Usman (2011). They specifically studied the risk management practices in Islamic banks. They found that bank size has significant relationship with credit and liquidity risk but insignificant and negatively associated with operational risk. Asset management has positive while gearing ratio and non-performing loans are negative but have significant relation with liquidity and operational risk, whereas capital adequacy is negatively associated with credit and operational risk and positively and significantly related with liquidity risk of banks.

Abdullah, Khan, and Nazir (2012) studied the credit risk management practices with perspective of domestic and foreign banks in Pakistan. According to the findings of the study bank size is positively related with credit risk in both domestic and foreign banks but it is significant in domestic banks and insignificant in foreign banks. Domestic banks have positive and significant relationship between credit risk and liquid assets whereas it is negatively related with credit risk in foreign banks.

Das and Ghosh (2007) conducted the study on determinants of credit risk in commercial banks of India. The results of the study revealed that GDP is an important determinant of credit risk in commercial banks and it has significant and negative relationship. In microeconomic factors, credit growth and non-performing loans are positively related and the relationship is significant. Loan portfolio is negatively related and size is positively related with the non-performing loans of banks. Most of the variables were proved to be insignificant in the study.

Ogboi and Unuafe (2013)Finance and Banking</ secondary-title></titles><periodical><full-title>Journal of Emerging Issues in Economics, Finance and Banking</full-title></periodical><pages>703-717</ p a g e s > < v o l u m e > 2 < / v o l u m e > < n u m b e r > 3 < / number><dates><year>2013</year></dates><urls></ urls></record></Cite></EndNote> studied the impact of credit risk management and capital adequacy on financial performance of Nigerian banks. The results proved the sound credit risk management techniques and capital adequacy have positive and significant impact on banking performance. Only loan and advances and non-performing loans were found to be negatively related with the performance of banking sector.

Tabari, Ahmadi, and Toyeh (2013) presented their research work on analyzing profitability effective factors of commercial banks in Iran. It is found that capital adequacy ratio, bank size, and assets management positively affect commercial bank's performance. However, non-performing loans are negatively associated with banks performance. Same results are obtained by having the proxy of ROE instead of ROA to measure the banking sector's performance.

Boahene *et al*. (2012) have conducted the study on commercial banks of Ghana to check the relationship between credit risk and profitability of banking sector. This study proved that in contrary to the previous studies credit risk is positively related with the profitability of the banks in Ghana. Despite these, it is also proved that bank's size, bank's growth, and debt equity structure also impact positively the profitability of the banks selected in the study.

Kaaya and Pastory (2013) conducted a study to find out the relation between credit risk and performance of commercial banks in Tanzania. Results of the study showed that credit risk measures are negatively associated with banks performance and ultimately decreases banks profit.Musyoki and Kadubo (2012) analyze the impact of different factors associated with credit risk management i.e. bad debt cost, cost per loan assets and default rate on financial performance of banks in Kenya and concluded that all these factors are negatively associated with bank's financial performance.Poudel (2012) conducted the similar study in Nepal by considering capital adequacy ratio as well and found the same results.

Khan, Anuar, Choo, and Khan (2011) have conducted study to check the determinants of banking profitability in Pakistan. They proved that deposit to asset ratio, loans to asset, non-performing loans, deposits to loans, NIM, return on assets, and non-interest income are the major factors that contribute to the profitability of banking sector in Pakistan. Furthermore banks were divided into small and large banks category. Loan growth rate has positive and significant relation with banking profitability and it proved insignificant in case of small banks.

Nawaz *et al*. (2013) examine the role of credit risk i.e. measured by increasing non-performing loans, in the financial distress of banks in Nigeria. It is found that credit risk management plays an important role in boosting profitability of the banks. Olalekan and Adeyinka (2013) ÿÿÿÿÿ/ examine the impact of capital adequacy on profitability of Nigerian banks, both domestic and foreign banks and found significant positive relation between CAR and profitability.

Alam andMusukujjaman (2011)conducted a research on risk management practices of selected commercial banks in Bangladesh. This study proved that credit risk, operational risk, and market risk are the major type of risks for the banks operating in Bangladesh. Internal rating system and risk adjusted rate of return on capital are proved to be effective techniques to mitigate the risks involved in operations of the banks. All these studies have proved the importance of capital adequacy and credit risk management for the financial performance of banks; banks are in great need of proper credit risk management for their success and long term sustainability in financial sector.

3. Research Methodology

The present study aims to examine the impact of credit risk and capital adequacy ratio on banks performance

and for that 14 commercial banks listed on Karachi Stock Exchange are selected. All data required for the study are collected from the annual reports of the selected banking companies for the period of 6 years from 2007-2012. Regression analysis is used to test the relationship.

3.1. Variables of the Study

Performance of the banks is measured by return on assets (ROA) and taken as dependent variable. Description of all variables (dependent and independent) used in this study is provided in Table 1 below.

Table 1: Description of Variables

Variables	*Measurement*	*Symbols*
Dependent Variable		
Return on Assets	Net Profit after tax/Total assets	ROA
Independent Variables		
Default Rate ratio	Non-performing loans/ Total loans	DR
Cost per Loan Asset	Total Operating costs/ Total loans	CLA
Bad Debt Cost	Bad debt cost/Total cost	BDC
Credit Risk	Total debt/Total assets	CR
Loans and Advances	Loans and advances/ Total deposits	LA
Capital Adequacy Ratio	Capital (Tier1 + Tier 2)/ Risk weighted assets	CAR

Model Specification

$$ROA_{it} = \beta_0 + \beta_1 BDC_{it} + \beta_2 CLA_{it} + \beta_3 CR_{it} + \beta_4 DR_{it} + \beta_5 LA_{itt} + \beta_6 CAR_{it} + e_{it} \quad \text{---------- (1)}$$

4. Data Analysis

4.1. Descriptive Analysis

Table 2 shows the descriptive information of dependent variable i.e. return on assets (ROA) and all independent variables i.e. BDC, CLA, CR, DR, LA and CAR. It shows that on average, return on assets (ROA) is 0.79% for all the banks selected in the study. The mean of bad debt cost is 0.002 times of total cost. On average, operating cost per loan assets is 0.17 times. Credit risk is 78.38% on average for the selected banks, having 60% minimum and 90.83% maximum credit risk. Mean value of default rate is 13.90%. Loans and advances are 60.55% on average. On average, capital adequacy ratio is 12.77% and minimum and maximum CAR is -3.56% and 30.79% respectively.

Table 2: Descriptive Summary

	ROA	*BDC*	*CLA*	*CR*	*DR*	*LA*	*CAR*
Mean	0.795	0.002	0.166	78.380	13.899	60.552	12.771
Median	1.199	0.00	0.167	79.089	9.715	60.891	12.65
Maximum	3.719	0.034	0.27	90.832	64.058	91.885	30.79
Minimum	-7.105	0.00	0.059	60.004	0.002	38.025	-3.56
Std. Dev.	1.797	0.007	0.048	5.878	13.430	11.794	5.392

Table 3: Correlation Matrix

	ROA	*BDC*	*CAR*	*CLA*	*CR*	*DR*	*LA*
ROA	1						
BDC	0.09095 (0.4106)	1					
CAR	0.67208 (0.0000)	-0.07818 (0.4796)	1				
CLA	-0.50635 (0.0000)	-0.26932 (0.0132)	-0.04444 (0.6881)	1			
CR	-0.22488 (0.0397)	0.035806 (0.7464)	-0.3878 (0.0003)	-0.1014 (0.3584)	1		
DR	-0.60732 (0.0000)	-0.08721 (0.4302)	-0.3955 (0.0002)	0.41694 (0.0001)	0.15998 (0.146)	1	
LA	-0.05542 (0.6166)	0.24523 (0.0246)	-0.30823 (0.0043)	-0.6393 (0.0000)	-0.15774 (0.1518)	-0.18955 (0.0842)	1

4.2. Correlation Analysis

In Table 3, correlation coefficients of dependent variable and independent variables are shown. It is found that ROA has significant negative relation with cost per loan asset, credit risk and default rate. All these variables are significant at 1 % level of significance as p-value is less than 0.01 except credit risk that is significant at 5 % level of significance as the p-value is $0.01 < 0.04 < 0.05$. However, capital adequacy ratio is strongly positively related with banks performance that is measured by ROA, significant at 1 % level of significance with correlation coefficient of 67.2 %. Bad debt cost shows positive relation with ROA but found statistically insignificant.

4.3. Regression Analysis

Regression results are given in Table 4.

Table 4: Regression Results

Variables	*Coefficient*	*Prob.*
C	15.37018	0.0000
BDC	7.986897	0.5663
CLA	-28.28157	0.0000
CR	-0.072662	0.0006
DR	-0.032248	0.0002
LA	-0.082217	0.0000
CAR	0.095719	0.0002
R-squared	0.807237	
Adjusted R-squared	0.792216	

Simple pool regression is applied, for which balanced data set is used. Results show that all selected variables are significant at 1% level of significance as p-values are less than 0.01 except the bad debt cost (BDC) that is statistically insignificant even at 10 % level of significance. Cost per loan assets is highly significant and has negative coefficient of -28.28 which shows that high operating cost against total loans is negatively affecting the banks performance. Other variable, credit risk (CR) is also negatively related with dependent variable as coefficient is -0.07; it means there is also negative relationship between credit brisk and performance of banks. Default rate (DR) which represents non-performing loans also have negative coefficient of -0.03 which indicates that among the determinants of credit risk, DR is highly significant and negatively associated with ROA. Coefficient of loans and advance (LA) is -0.08. The most important variable of the study capital adequacy ratio (CAR) is highly significant having coefficient of 0.09 and is positively affecting the performance of banks in Pakistan. It also shows that model is statistically fit as the value of R-squared and adjusted R-squared id 0.81 and 0.79 respectively which means that 81 % variation in the dependent variable (ROA) is explained by the selected independent variables. Findings of the study are consistent with the previous results of Kaaya and Pastory(2013), Musyoki and Kadubo(2012), Nawaz *et al*. (2013), Ogboi and Unuafe (2013), Poudel (2012) and Tabari *et al*. (2013).

5. Conclusion

This study aims to find out the impact of credit risk determinants and capital adequacy ratio on the financial performance of banking companies in Pakistan. Different factors are considered for the analysis that contribute in the credit risk and ultimately adversely affect the performance of banks. After the detailed analysis, it is concluded that credit risk, default rate (non-performing loans), cost per loan assets and loans and advances are negatively associated with return on assets. Results indicate high credit risk is deteriorating the financial performance of commercial banks in Pakistan. Banks are recommended to control their operating cost per loan and non-performing loans to mitigate credit risk associated with their core operations. However, capital adequacy ratio has a significant positive impact on performance of the banks. The results showed that average CAR for most of commercial banks in Pakistan is above benchmark CAR specified by State Bank of Pakistan (SBP) under BASEL II, indicating the healthy position of banks in terms of capital cushion against default losses.

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