

## Credit Risk Exposure and Performance of Banking Sector of Pakistan

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### ABSTRACT

Basic objective of financial institution is to channel funds from the savors to the investors and other fund seekers. In this process of mediation it is likely that some of the loan extended to borrowers may not perform well and borrowers may default to pay their obligations of interest and principal payment. This risk is termed as credit risk and adversely affects performance of banks. Hence, it is crucial for banks to effectively manage the risk faced by these transactions. This research has taken into account the impact of credit risk on the performance of banking system of Pakistan. Results of fixed effect regression analysis on panel data for period of 2006-2011 has revealed that credit risk measured by ratio of Nonperforming loans to total loan and loan loss provision to non performing loan negatively affect performance variables of ROA and ROE. Hence the more a bank is facing credit risk the more deterioration in performance it experiences. The effect of increase in ratio of total loan to total deposits significantly increases banks profitability.

**KEY WORDS:** non performing loans, credit risk, performance, banks, default risk

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### INTRODUCTION

Banks play an important role in the economic growth of a country. These institutions channel funds from savors to lenders for the investment and other productive purposes. Hence these institutions enable investors to exploit new ventures and increase the pace of economic prosperity of the country. The more funds provided by these institutions the more are investment opportunities and enhancement of corporate sector operations. Investors initiate new projects with the funds provided by the banks and generate new employment and mobilize the resources of country. This acceleration of economic activities contribute in GDP growth of the country. Hence financial institutions play a key role in overall economic development of the country

As these financial institution extend credit to the investors for investment there are likelihood that investment project may not perform well or fail to generate positive NPV. If so investors are likely to default or unable to refund the credit extended by financial institution. Hence the risk of losing a substantial part of credit extended by bank is always there. This possibility is termed as credit risk and it is most important concern for the banking sectors. As main source of banking industry is credit extension and earning return in the form of interest, so this risk is unavoidable for the banking sector. Credit risk has also been appeared as determinant of profitability of banks along with other factors. Similarly efficient and intelligent management of credit risk subsequently result in bank efficiency in terms of scale, scope, technical allocated and cost efficiency (Sathye,2001 Berger and Mester 1997).

However banks take certain steps to decrease the intensity and probability of loss. Credit risk is defined by the Basel committee on banking supervision as “the possibility of losing the outstanding loan partially or totally, due to credit events (default risk)”.credit risk is also an important indicator of performance of a bank. With increase in bank exposure to credit its tendency to undergo a financial crisis also increases. Secondly substantial portion of bank earning is derived from the interest gained on loan extended to clients. So, managing credit risk is indispensable for bank survival and profitability.

Basel 2 accord of banking sector emphasizes on the sound credit risk management technique. Compliance with this accord ensures effective approach toward risk management which in turn increases bank performance. By the

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effective risk management and compliance of Basel 2 and other such standards not only the economic health of that bank increases instead it fosters overall efficient credit allocation and systematic effectiveness of entire economy (Tsolas, Psillaki, and Margaritis, 2010).

Pakistani banking sector has undergone a systematic transition in the last decade by the introduction and extensive use of IT for the automation and efficiency of operation. Network and profitability of banks have increased to a greater extent despite the overall economic instability and global financial crisis of 2007. With the increase in the operational activity and credit extension effective risk management has become more pressing for banks efficiency and stability. Rapid increase in non performance loan along with increasing credit extension may pose future crisis for bank. Nonperforming loan is the loan percentage value which has not been serviced for last 3 months and above (Ahmad and Arif, 2007).

This study is aimed to explore the performance effect of credit risk on banking sector of Pakistan for the period of 2006-2011. Motive of the research is to empirically analyze the detrimental effect that credit risk places on the performance of rapidly growing and important sector of banking industry. The results are expected to be helpful in suggesting policy recommendations for the effective risk management practices and enhance overall efficiency.

## LITERATURE REVIEW

The core aim of banks is to channel funds from savors, which have excess funds to those who need it i.e. investors. This intermediation is done at a profit which is difference of return in the form of interest charged to investors from that which is provided to savors. Hence it is indispensable for the banks to undertake risk of credit extension in order to carry out its operation and earn profit. However banks can take steps to exactly measure and efficiently manage the risk faced by this sector. Proper risk management not only enhances credibility of lending institution but also ensure future return with minimal flexibility.

Chen and Pan (2012) define credit risk as the extent of value fluctuation of loans and derivatives due to change in the credit quality of borrowers and counterparts. According to Coyle (2000) it is the loss from inability or refusal of customer to pay what he is owed to pay. Credit risk is the loss faced by the bank when the borrower defaults in honoring the debt obligation on due date or on maturity. This term is also called counter party risk and may lead bank to bankruptcy if non appropriately managed. By using credit risk management bank can maximize its risk adjusting rate of return by maintenance of risk within acceptable of range. By this banks provide a framework for estimating the effect of credit risk on profitability of bank (Karghi, 2011).

Credit risk mainly arises due to lack of institutional capacity, in appropriation of credit policies, interest rate volatility, poor quality of management, lapses of laws and regulations, liquidity constraints and inappropriate credit assessment, inefficient lending practices and interference of government by central bank (Kithinji, 2010)

By applying risk management strategies banks are likely to avoid completely or partially from the negative effects posed by the credit risk. It requires a comprehensive and extensive framework of managing credit risk and it is crucial for banks survival and better performance. A supportive structure should be established and the entire process should be disciplined and prioritized. Responsibilities should be allocated and communicated well.

**Credit derivatives:** By applying this technique banks do not need to adjust their credit risk. Banks can reduce their capital regulated by them by using these derivatives. Most common of these derivatives is credit default swap in which the seller shifts the credit risk to a protection buyer of loan portfolio risk. With the help of this security banks can lend more vigorously even to potentially less reliable clients as their risk is being borne by certain other party. Recently use of credit derivatives by financial institution has increased remarkably.

**Credit Securitization:** By using this method banks can shift their credit risk to an insurance or factor firm. By doing so banks are no more to worry about monitoring and evaluation of borrowers and to tackle the classified loan fear. This instrument has become very popular now a day because it enable banks to diversify their concentration of credit risk and provide an alternative source of funding to banks and also equip bank with liquidity and arbitrage opportunity. The way by which banks loans (assets) are eliminated from balance sheet of banks and are converted into marketable securities and then these securities are sold and traded in the market and this arrangement is termed as special purpose vehicle (Marsh 2008).

**Basel Accord compliance:** These accords are international regulatory guiding principles for banks operation of soundness and stability insurance. This accord was introduced in Switzerland in 1988. Compliance of this accord enables to generate, identify report and tract the data relating to risk in an integrated way. This integration is fully auditable and transparent and acts as an opportunity of risk management improvement of banks. This accord place the burden on banks to manage risk effectively in order to improve their capital adequacy position.

**Sound lending policy:** An appropriate and comprehensive lending policy guides the banks on loan disbursement. Strong adherence to this policy is most suitable and economical way of risk management. This policy should also be

in line with the overall business strategy of bank and include all the macro economic factors of economy and industrial norms and values (Kithinji 2010).

Al-khouri (2011) evaluated the effect of risk characteristics specific to bank on the performance of banks by taking a sample of 43 commercial banks from 6 Gulf cooperation council (GCC) countries for the period of 1998-2008. They employed fixed effect regression analysis. Results revealed that main risk affecting performance were liquidity risk, credit risk and capital risk when performance measured by ROA and only results for liquidity risk were significant when performance was measured by ROE.

In an attempt to analyze the determinant of credit risk for developing country as compared to developed countries Ahmad and Arif (2010) found that regulation offering multi-product is important for banking system. Quality of management also proved to be an important determining factor for developing countries. Loan loss provision also appeared an important determinant of credit risk. Further the study found that credit risk for developing country was more prominent as compared to developed countries.

Felix and cloudine (2008) assessed the credit risk and performance relationship. Findings suggested that for both measures of firm performance ROA and ROE there was negative relationship with credit risk. Credit risk was measured by ratio of non-performing loans to total loans of banks.

Amindu and Hinson (2006) investigated the impact of capital structure and credit risk on lending decision and profitability of banks of Ghana. Using panel data regressions the researchers found that credit risk exposure of Ghanaian banks was 1%. The source of financing for 86% of banks' assets was debt. Average rate of lending was 28%. Capital structure appeared to be positively related to credit risk and profitability and negative relation for size of banks' lending rate and liquid asset with capital structure.

Bodla and Verma (2009) evaluated the framework of credit risk management in Indian perspective. They used survey based methodology and found that credit risk approval authority was vested with board of directors for 94.4% of banks for public sectors and 62.5% for private sectors banks while for rest it was with Credit Policy Committee. For managing their credit risks banks were employing various methods like, credit calls, plants visits and review of accounts and industry study and MIS development. However the use of derivative for risk management was minimal for Indian banks.

Aman and Zaman (2010) examined the impact of privatization on the credit risk and performance of Pakistani state owned (SOBs), private banks (PBs) and foreign banks (FBs) for the period of 1990-2005. Using Error correction model and ensuring data stationarity they found that capital adequacy ratio is statistical significant and positively related to SOBs and FBs. Impact of liquidity risk on both types of banks was negative and statistically significant as expected. Credit factor (CF) was significant and positive for the private banks. The researchers recommended effective and efficient extension of credit for private banks in order to significantly contributing in the economic growth of country.

Zribi and Boujelbène (2011) analyzed the determinant of banks credit risk for the developing country of Tunisia. They took a sample of 10 commercial banks for the period of 1995-2008. Taking into consideration both micro economic and macroeconomic factors for credit risk determination the regression results disclosed that overall the most contributing factors are ownership structure, capital regulation macroeconomic factors and profitability.

In an attempt to investigate the determinants of credit risk Muhammad and Nor (2007) conducted a comparative study of factors determining the credit risk of multi-country commercial banks. Sample included both developed and developing countries. In developed Australia, Japan, U.S. and France were included and Malaysia, Korea, Thailand and Mexico were emerging economies. Results suggested that regulatory capital was an important contributing factor for credit risk. Credit risk of emerging economies appeared to be more than that of developed countries and risk was accumulated by bank specific factors in case of emerging countries.

Ineffective and inappropriate credit risk management may lead to financial difficulties and subsequently to banking crisis same happened in case of Zimbabwean banking crisis. KOSMAS NJANIKE (2009) analyzed the determinant of Zimbabwean crisis by using survey and interviews of 10 commercial banks randomly selected. The researcher found ineffective credit risk management as the main determinant of banking crisis. Along with that other factors included poor corporate governance and excessive insider lending inability of board and higher management, inappropriate expansion plans, shortage of foreign currency and severe liquidity problems and focus on speculative activities and concentration of sectors and other macro economic factors like increase in interest rate and inflation rate and exchange rate, slow growth and results also suggested continuous and review and reporting and incorporating new challenges and regulation into the risk management policies should also be assured in order to strengthen the economic health of banking sector.

## METHODOLOGY

Data for 21 banks including state owned, private and foreign banks have been collected in order to check the effect of credit risk on performance of banking sector. Banks have been selected on random sampling basis. This sample is likely to be the representative of entire banking industry as it includes banks from all major sectors i.e. public, private and foreign. Sample covers almost 50% of the population of entire system. Reason for exclusion of rest of banks is the unavailability or incomplete availability of data and other constraints.

Study employs fixed effect panel data regression analysis. Panel data is more comprehensive and also eliminates some of the drawbacks of time series like auto-correlation and multicollinearity. Secondly with the inclusion of more observation degree of freedom and explanatory power of the model also improves. Hausman test was employed to check the fixed or random effect. Significant results of Hausman test and rejection of null hypothesis advocated the application of fixed effect regression analysis.

The study measures credit risk by the ratio of nonperforming loans to total loans (NPL/TL), total loan and advances to total deposits (TL/TD), and loan loss provision to total classified loans (LLP/NPL). Nonperforming loans are the loans which are in danger of default i.e. they are not active for almost 90 days (they are not paying their interest). Loan loss provision is the provision set by banks for potential non performing loans. Classified loans are same as non performing loans. The performance of banks is measured by very popular proxies of return on assets (ROA) and return on equity (ROE). Following are the models developed to analyze the relationship of credit risk and performance.

$$ROA_{it} = \alpha_{it} + \beta_1 NPL/TL_{it} + \beta_2 TL/TD_{it} + \beta_3 LLP/NPL_{it} + u_{it}$$

$$ROE_{it} = \alpha_{it} + \beta_1 NPL/TL_{it} + \beta_2 TL/TD_{it} + \beta_3 LLP/NPL_{it} + u_{it}$$

Where

$\alpha_{it}$ = intercept for firm i and time period t

$ROA_{it}$ = return on asset

$NPL_{it}$ =non performing loans

$TL_{it}$ =total loans and advances

$TD_{it}$ = total deposits

$LLP_{it}$ = loan loss provision

$u_{it}$  = error term

i indicates cross section (firm) and t denotes time period

### Regression results

Following table 1 explains the results obtained by the time period fixed effect regression analysis of model 1. All the table indicates results for NPL/TL and LA/TD is significant at 1% level while the results for LLP/NPL are significant at 10% level. The coefficient for NPL/TL indicates that 1% change in this ratio will cause .01% change in ROA. Similarly result for LA/TD suggests that 1% change in this ratio will cause .03% change in the dependent variable ROA. When the regression analysis done without any effect fixed or random the explanatory power of results i.e. R-square was substantially lower. Regression is also run by fixing the effect of cross section. Results for the coefficients were insignificant but the R-square value was 60% which is an indication of multicollinearity. Value of Durbin Watson is not within acceptable range. However the problem is not that much severe when we are using panel data. This is a time series issue. Similar results were found by Funso et al. (2011) where coefficients for NPL -0.06 and that of TL was 0.09 which suggest positive effect of loan and advance while negative effect of nonperforming loans. The results for coefficients became insignificant when auxiliary regression was run for dependent variable ROA.

**Table 1: Dependent Variable ROA**

Variable	Coefficients	Std. Error	t-Statistic	Prob.
Constant	0.023	0.005	4.199	0.000
LA/TD	-0.030	0.009	-3.227	0.001
LLP/NPL	-0.009	0.005	-1.772	0.071
NPL/TL	-0.016	0.006	-2.62	0.009
<b>R<sup>2</sup>0.16</b>			<b>F-statistics</b>	<b>2.70</b>
			<b>Prob. (F-statistics)</b>	<b>0.00</b>
<b>Adjusted R<sup>2</sup>0.10</b>			<b>Durbin-Watson</b>	<b>1.003</b>

Regression results for model 2 also provide significant results for fixed effect regression analysis. Results LA/TD are significant at 5% with coefficients of 0.26 meaning 1% increase in ratio of loans and advances against total deposits will increase performance measure of ROE to 0.26%. Similarly results for LLP/NPL are significant at 10% with coefficients -0.12. These results are for cross section fixed effect but when both cross-section and time period were fixed the results were significant with coefficients relatively lower magnitude but explanatory power improved a little. Table also illustrates that explanatory power of model is much higher in case ROE as dependent variable as compared to ROA. Similar results were obtained by Aman and Zaman (2010) when they employed error correction model and found positive relation between capital adequacy ratio and ROE and negative between ROE and liquidity risk

**Table 2: Dependent Variable ROE**

Variable	Coefficients	Std. Error	t-Statistic	Prob.
Constant	0.023	0.005	-0.099	0.921
LA/TD	-0.030	0.009	2.739	0.007
LLP/NPL	-0.009	0.005	-1.919	0.057
NPL/TL	0.009	0.006	0.151	0.879
R <sup>2</sup>	0.60		F-statistics	6.70
Adjusted R <sup>2</sup>	0.51		Prob.(F-statistics)	0.00
			Durbin-Watson	2.57

**Conclusion:**

This research paper has taken into consideration a key issue of credit risk faced by the banks and the effects which the banks have to face due to this risk. It is inevitable for the banks to face this risk and manage it efficiently and effectively. Success of a bank depends upon the successful management of this risk. This paper has taken into consideration the affect of credit risk on performance of the banking sector of developing economy of Pakistan. When using non performing loan as proxy for credit risk Results for the regression analysis run to analyze the effect of this risk on performance variables indicate that this risk negatively affects both the performance variables of ROA and ROE. Though the coefficients are significant for both performance measures however the magnitude of coefficients is significantly small implying that there are many other factors affecting the performance along with the variables considered in this research. This research also suggests that the more a bank advances loan to the clients the more performance improvement it enjoys.

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