Original Article

CREDIT RISK MANAGEMENT AND PROFITABILITY: A STUDY FROM NEPALESE COMMERCIAL BANK

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ABSTRACT

The main aim of the study is to investigate the impact of credit risk management on bank profitability in Nepalese commercial banks. Non-performing loan ratio, Leverage ratio, Capital adequacy ratio, Loan loss provision, Credit interest to credit facilities are independent variable whereas return on assets is dependent variable. Data has been collected from the Annual Reports of selected commercial banks, Banking and Financial Statistics and Bank Supervision Report published by Nepal Rastra Bank. The study is based on 25 samples making 250 observations. The independent study is completed using a blend of Independent t-test, Pearson's Correction, analysis of variance (ANOVA), multiple regression *analysis. The result shows that, capital adequacy ratio, leverage ratio, non-performing loan ratio, loan loss provision ratio is negative relationship to dependent variable return on assets. Likewise, credit interest to credit facilities is positively related to return on assets.*

Keywords: *Credit Risk Management, Profitability, Analysis of Variance, Multiple Regression*

1. Introduction

Banks are financial institutions that play intermediary role in the economy through channeling financial resources from surplus economic units to deficit economic units. In turn, they facilitate the saving and capital formation in the economy. Banks are exposed to different types of risks, which affect the performance and activity of the banks. Bank plays a vital role in emerging economies where most borrowers have no access to capital markets. Thus, bank is considered as an intermediary between the depositors and borrowers. A commercial bank is an institution that provides financial services including issuing money in various forms, receiving deposits of money, lending money and processing transactions and the creating of credit (Campbell, 2007).

Banks today are the largest financial institutions around the world, with branches and subsidiaries. There is abundance of differentiations between types of banks and much of this differentiation rests in the products and services that banks offer (Howells, 2008). For instance, commercial banks hold deposits bundling them together as loans and operate payments mechanism. The various functions of banks are making business loans, offering deposit services (saving deposits), supporting government activities like credit, granting consumer loans, financial advising, cash management offering, equipment leasing, safekeeping of valuables, carrying out currency exchanges and discounting commercial notes etc.

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Credit risk is one of the most significant risks that banks face, considering that granting credit is one of the main sources of income in commercial banks. Therefore, the management of the risk related to that credit affects the profitability of the banks. The importance of credit risk management in banks is due to its ability in affecting the banks' financial performance, existence and growth. It is observed that the bank credit depends upon the economic activities in an economy. As economy grows bank credit accelerates while the slow growth of the economic activity or the decline in economic activity results decline in bank credit (Dash & Kabra, 2010).

Effective management of credit risk is complicated. It is linked to the development of banking technology, which will enable to increase the speed of decision making and simultaneously reduce the cost of controlling credit risk. This requires a complete base of partners and contractors (Lapteva, 2009). Credit risk is one of significant risks of banks by the nature of their activities. Through effective management of credit risk exposure, banks not only support the viability and profitability of their own business but also contribute to systemic stability and to an efficient allocation of capital in the economy (Psillaki et al. 2010). The default of a small number of customers may result in a very large loss for the bank (Gestel and Baesens, 2008).

In the context of Nepal, Paudel (2006) found that interest income from loan and advances were the main sources of income, which increases the profit of commercial bank. Dhungana and Upadhyaya (2011) found that the sound lending policies and optimum portfolio management of financial institutions as well as effective regulation and supervision of financial institution ensure the significant reduction in non-performing loan and enhance banking efficiency. Jha and Hui (2012) found negative relationship of nonperforming loan and capital adequacy ratio (CAR) with of return on assets (ROA).

2. Research Methodology

The study is based on descriptive and causal-comparative research designs. This study establishes the cause and effect relationship between selected bank credit risk variables and the financial performance of commercial banks in Nepalese context. The study is based on secondary data. More specifically, the study analyzes the impact of return on assets, capital adequacy ratio, loan loss provision, non-performing loan, leverage ratio and credit interest to credit facilities on financial performance of the Nepalese commercial banks. For the study purpose, banks involving in banking services at least for three years have been considered for sample. Since all of them did not provided scope for the study, 25 different Nepalese commercial banks were taken out of 29 as a sample for the period of 2007-2017 making total of 250 observation

The descriptive research design has been adopted for fact-finding and searching for adequate information about the fundamental issues associated with variables affecting financial performance of Nepalese commercial banks. It describes the real and actual condition, situation and facts. Hence, the research design adopted in this study is of descriptive type.

RESEARCH MODEL

The models employed in this study intend to analyze the relationship between performance and credit risk indicators. The following regression model is used in this study in an attempt to examine the empirical relationship between the impacts of credit risk management on financial performance of Nepalese commercial bank. Therefore, the following model equation is designed to test the hypothesis. From the conceptual framework the function of dependent variables (i.e. profitability) takes the following form:

Profitability (ROA) = f (CAR, LR, NPLR, LLP, CICF)

More specifically, the given model has been segmented into following model:

Model :

$$ROA_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 LR_{it} + \beta_3 NPLR_{it} + \beta_4 LLP_{it} + \beta_5 CICF_{it} + e_{it}$$

In above model, the dependent variable is the return on assets indicated by the net profit after tax to total assets. Where,

β_0 = Constant term

CAR = Capital adequacy ratio (independent variable)

NPLR = Nonperforming loan ratio (independent variable)

LLP = Loan loss provision (independent variable)

LR = Leverage ratio (independent variable)

CICF = Credit interest to credit facilities (independent variable)

ROA = Return on assets (dependent variable)

3. Hypothesis

H_1 : There is a positive relationship between capital adequacy ratio and bank's financial profitability.

H_2 : There is a negative relationship between non-performing loan and bank's financial profitability.

H_3 : There is a negative relationship between loan loss provision and bank's financial performance

H_4 : There is a negative relationship between leverage ratio and bank's financial performance.

H_5 : There is a positive relationship between credit risk to credit facilities and bank's financial performance.

4. Presentation and Data Analysis

Descriptive analysis

The descriptive statistics used in this study consists of mean, median, standard deviation, minimum and maximum values associated with variables under consideration. Table 4.9 summarizes the descriptive statistics of variables used in this study during the period 2007/08 through 2013/14 for 25 sample commercial banks of Nepal.

Table 1. Descriptive statistics

Variables	Minimum	Maximum	Mean	Std. Dev.
ROA	-0.9860	18.0400	1.7645	1.7539
CAR	5.5500	41.8200	13.6875	4.6585
LR	1.0300	15.1900	6.8646	2.0678
NPLR	0.0002	0.1980	0.0222	0.0307
CI/CF	1.4859	14.4686	10.2697	2.2408
LLP	0.1441	36.1757	3.6101	4.7836

Table 1 shows that return on assets has minimum value of -0.9860 percent to a maximum value of 18.040 percent with a mean of 1.764 percent and standard deviation 1.753 percent. The capital adequacy ratio noticed to be a minimum value of 5.550 percent to a maximum of 41.82 percent with an average of 13.6 percent and standard deviation 4.65 percent. The leverage ratio noticed to be a minimum value of 1.030 times to a maximum

of 15.190 times with an average of 6.864 times and standard deviation 2.06 times. Non-performing loan ratio varies from a minimum of 0.0002 times to a maximum of 0.198 times with an average of 0.022 times and standard deviation of 0.0307 times. Similarly, CI/CF is observed with a minimum value of 1.49 percent, maximum value of 14.47 percent and mean value of 10.27 percent. Likewise, the LLP varies from a minimum of 0.14 percent to a maximum of 36.17 percent leading to an average of 3.61 percent and standard deviation of 4.78 percent.

Correlation analysis

Correlation analysis is a statistical approach used to determine the level of association between two variables. It is worth pointing out that correlation does not suggest causality, rather, the direction of the change or movement. A strong, or high, correlation means two or more variables have a strong relationship with each other while a weak, or low, correlation means that the variables are hardly related. Thus, the Pearson's correlation has been performed between dependent and independent variables and the results are presented in Table 2.

Table 2. Pearson's correlation matrix for the dependent and independent variables

	ROA	CAR	LR	NPLR	CI/CF	LLP
ROA	1					
CAR	-.162* .048	1				
LR	-.017 .832	-.722** .000	1			
NPLR	-.548** .000	-.121 .143	-.125 .129	1		
CI/CF	.207* .011	-.174* .034	-.126 .124	.299** .000	1	
LLP	-.656** .000	-.074 .368	-.155 .059	.932** .000	.228** .005	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The result shows that non-performing loan ratio and leverage ratio are negatively correlated to return on assets which indicate higher the non-performing loan ratio lower would be return on assets. It also indicates higher the leverage ratio lower would be return on assets. Likewise, loan loss provision ratio and capital adequacy ratio are also negatively correlated to return on assets which indicate higher the loan loss provision ratio lower would be the return on assets. It indicates that an increase in capital adequacy ratio leads to decrease in the return on assets. The result shows that credit interest to credit facilities is positively associated to return on assets which indicate that higher the credit interest to credit facilities higher would be the return on assets.

Regression analysis

In order to test the statistical significance and robustness of the results, this study relies on secondary data analysis based on the regression models specified in the chapter three. The regression result of credit risk variables on return on assets is presented in Table 3.

Table 3.

Estimated regression results on determinants of return on assets

Models	Intercept	Regression Coefficients of					Adj. R^2	SEE	F
		CAR	LR	NPLR	CI/CF	LLPR			
1	2.601 (5.87)**	-.061 (1.99)*					.020	1.77	3.981
2	1.866 (3.72)**		-.015 (-.21)				-.006	1.76	.045
3	1.069 (7.17)**			-31.300 (-7.94)**			.296	1.47	63.107
4	.103 (.15)				.162 (2.56)**		.036	1.72	6.564
5	.897 (6.56)**					-.240 (-10.52)**	.426	1.33	110.84
6	.060 (.12)			-31.875 (-3.24)**	.087 (1.73)	-.422 (-6.81)**	.461	1.29	43.128
7	1.663 (4.81)**	-.054 (-2.34)*		-30.924 (-3.32)**		-.422 (-6.900)**	.470	1.28	44.683
8	5.288 (4.45)**	-.138 (-3.16)**	-.239 (-2.43)**				.051	1.71	5.018
9	.913 (6.84)**			-27.722 (-2.88)*		-.406 (-6.58)**	.453	1.29	62.345
10	.625 (.48)	-.043 (-1.17)	-.019 (.23)	-34.126 (-3.47)**	.076 (1.44)	-.435 (-7.02)**	.470	1.27	27.266

Notes:

1. Figures in parentheses are t-values.
2. The asterisk (**), (*) sign indicates that the results are significant at 1% and 5% level of significance respectively.

The results show that beta coefficient for capital adequacy ratio and leverage ratio are negative. This indicates that lower the capital adequacy ratio, higher would be the return on assets. This finding is similar to the findings of Shrieves & Dahl (1992). The negative beta coefficients for leverage ratio indicate that higher the leverage ratio, lower would be the return on assets. The study also reveals that the beta coefficients is positive for credit interest to credit facilities with return on assets. The results, hence, indicate that higher the credit interest to credit facilities, higher would be the return on assets. This finding is consistent with the findings of Zoubi, (2007) and Gizaw (2015). The beta coefficient for non-performing loan ratio and loan loss provision ratio are negative and significant with return on assets. It indicates that higher the non-performing loan ratio lower would be the return on assets. This finding is similar to Noman et al (2015) and Jha and Hui (2012). Similarly, result reveals that higher the loan loss provision, lower would be the return on assets.

5. Conclusion

Commercial banks play an important role for economic development, and foster economic growth of any country through their

intermediation role and financial services that they provide to community and nations. Among risks in banking operation credit risk which is related to substantial amount of income generating assets is found to be important determinant of bank performance (Rose & Hudgins, 2005). Credit risk plays an important role on banks profitability since a large chunk of banks revenue accrues from loans from which interest is derived.

Effectively managing credit risk in financial institutions is critical for the survival and growth of the financial institutions. In the case of banks, the default of loans and advances poses serious setbacks not only for borrowers and lenders but also to the entire economy of a country. The long term success of any banking institution depended on effective system that ensures repayments of loans by borrowers which were critical in dealing with asymmetric information problems, thus, reduced the level of loan losses.

The major conclusion of the study is that loan loss provision ratio and non-performing loan ratio are the major factors affecting banks performance in Nepalese commercial banks. The results reveal that NPL and LLP have negative relationship with profitability of banks. This indicates that increase in NPL and LLP leads to decrease in profitability of the banks. The study shows that capital adequacy ratio has negative relationship with return on assets. This study also concludes that credit interest to credit facility have positive impact on profitability of the Nepalese commercial banks. This indicates that higher the credit interest to credit ratio, higher would be the bank profitability. Likewise, result shows that capital adequacy ratio, non-performing loan ratio and loan loss provision ratio have negative and significant impact on return on assets.

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