IMPACT OF FINANCIAL RATIOS ON PROFITABILITY OF COMMERCIAL BANKS IN NEPAL

Associate Prof. Dr. Kapil Khanal

Campus Chief Shanker Dev Campus Kathmandu, Nepal

 Email:kapilkhanal848@gmail.com

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Research and Publication Division
Sahara Campus
Birendranagar Surkhet
Karnali Province, Nepal
Email:editorialboardsahara@gmail.com
Phone:083-520118

ABSTRACT

The purpose of the study was to understand the impact of some financial ratios on the profitability of commercial banks in Nepal. Secondary data were collected through annual reports and publications of thirty commercial banks. Multiple regression models were used to analyze and interpret the data. Analysis showed that the amount of impact of the financial ratios on bank's profitability varies from bank to bank in Nepal.

Key words: Bank profitability; financial ratios; commercial banks; Nepal.

INTRODUCTION

The impacts of financial ratios on bank profitability have received much attention from academic researchers. In this context, the importance of this research study is an attempt to identify the impact of some of the selected financial ratios on bank profitability in Nepalese commercial banking industry. This study follows a study of Vong and Chan (2006), Athanasoglou et al., (2006) and Naceur (2003), among others.

To identify the impact of some of the financial ratios on profitability, three profitability measures, namely return on assets (ROA), return on equity (ROE) and net profit (NP) have been

used. The first is the rate of return on average assets (ROA), calculated as net profit before tax divided by average total assets. ROA denotes banks management efficiency to generate revenue

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through utilizing the bank asset base and hence has emerged as a key measure frequently used in the literature for evaluating bank performance.

The second measure widely used in the literature, as an alternative measure of banks profitability is the rate of return on average equity (ROE), calculated as net profit before tax divided by shareholders' average total equity. It reflects a bank's efficiency at generating profits from every unit of shareholders' equity. However, evaluation of bank profitability based on the use ROE as a profitability indicator must not be interpreted in isolation but should be construed in the context of the bank's debt-equity relationship.

The third measure is the bank's net profit, calculated as the net interest income (the difference between the bank's interest revenues and its interest expenses). As net profit measures ex-post interest rate spread (the difference between the rate the bank charges on loans and other users. of bank credit and that the bank pays on deposits), it is considered a good proxy of banks' cost of intermediation thereby it reflects how efficiently the bank's funds are being intermediated and how profitable the bank's interest-earning business is.

OBJECTIVES OF THE STUDY

  i.   To analyze competitive position of commercial banks with respect to return on assets, return on equity and net profits.
  ii.   To evaluate the impact of capital adequacy, assets composition, deposit, credit risk and cost of management on bank's profitability.

REVIEW OF LITERATURE

There are five financial ratios, selected for analysis. Among them, one is capital adequacy ratio. Capital adequacy ratio is the capital strength which is calculated by dividing equity over total assets. Its impact on bank profitability is found to be ambiguous. Higher the ratio, higher the profitability as there will be less need for external funds which decreases cost of capital (Molyneux, 1992). A lower capital ratio suggest a relatively risky position and negative coefficient on this variable is expected (Berger, 1995).

The ratio of operating expenses to total assets is used to measure the efficiency of banks in managing its expenses. Majority of studies suggest a negative impact of operating expenses on profitability as efficient banks are able to operate at lower cost. However, Molyneux and Thornton, 1992 observed a positive relationship between the two, suggesting that higher profits earned by firms may be appropriated in the form of higher payroll expenditure paid to more productive human capital.

Using a sample of 201 American banks during 1984-1990 Miller and Noulas (1997) analyze the effect of bank portfolio mix on large bank profitability and report insignificant negative effect of real estate loans on large bank profitability but strong positive effect between profitability and construction & land development loans and consumer loans. As far as loan portfolio risks is concerned, (Papadamou, 2008) gives some evidence from South Korea and indicate that less diversified across industries, loan portfolios are correlated with higher non-performing loan ratio. A shift from manufacture lending towards real estate and lease business lending can reduce the risk of bank loan portfolio. This can give some useful insights on how bank loan portfolio risk may affect profitability. Credit risk is calculated by dividing net non-performing assets over net advances. It is a measure of asset quality. Bad asset quality is expected to have a negative impact on profitability as it reduces interest income.

METHODOLOGY USED

Types and Sources of Data

Secondary data was gathered from the banks' annual reports and financial reports including profit and loss accounts and balance sheets via the internet (Nepal Rastra Bank's website), government papers and consultancy reports.

Population and Sample Size

The population of the research study is all 27 commercial banks in Nepal of mid-July, 2021. Basically, these banks are classified into three broad categories- government-owned banks, joint-ventures banks and private sector commercial banks. All types of banks are the area of concern. The financial information of all the banks is available for the year 2011 to 2021. Therefore, pooled regression is based on the data of 2011 to 2021. This study includes all

commercial banks established as per the NRB records at the mid July, 2021. There were 27 commercial banks by the end of fiscal year 2021. All 27 banks were selected for analysis.

Different Forms of Dependent Variables

The primary focus of this research is the relationship between net profits and profitability, and bank's characteristics indicators .Three measures of bank performance are used in the study: the net profits (NP), the return on assets (ROA) and the return on equity (ROE). The net profit variable is defined as the net profits earned by commercial banks in a particular fiscal year. Return on assets is a ratio computed by dividing the net income over total assets. Return on equity is a ratio computed by dividing the net income over shareholders' equity. NP, ROA and ROE have been used in most commercial banks' performance studies.

Return on Equity (ROE)

Return on Equity is one of the profitability ratios. It measures the profit earned per rupee of shareholders' equity. Return on equity (ROE) measures the rate of return on the ownership interest (shareholders' equity) of the common stock owners while net profit is focused on the profit earned by commercial banks.

The ROE is calculated by dividing net income by the shareholder's equity.

,The formula for return on equity is

$$= \frac{\text{Net income}}{\text{Share holders'Equity}}$$

Return on Assets (ROA)

Return on assets is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings. ROA measures the profit earned per rupee of assets and reflect how well bank management use the bank's real investments resources to generate profits. Calculated by dividing a company's annual earnings by its total assets, ROA is displayed as a percentage. Sometimes this is referred to as "Return on Investment"

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,The formula for return on assets is

$$= \frac{\text{Net income}}{\text{Total Assets}}$$

ROA tells what earnings were generated from invested capital (assets). ROA for public companies can vary substantially and will be highly dependent on the industry. This is why when using ROA as a comparative measure, it is best to compare it against a company's previous ROA numbers.

Different form of Independent Variables

Capital Adequacy Ratio

It is a percentage ratio of a financial institution's primary capital to its assets (loans and investments), used as a measure of its financial strength and stability. According to the Capital Adequacy Standard set by Bank for International Settlements (BIS), banks must have a primary capital base equal at least to eight percent of their assets. It can be calculated by applying the following formula:

,The formula for capital adequacy ratio is

$$\text{Capital Adequacy Ratio} = \frac{\text{Paid up Capital}}{\text{Total Assets}}$$

Operating Expenses Ratio

An expense incurred in carrying out an organization's day-to-day activities, but not directly associated with production. Operating expenses include such things as payroll, sales commissions, employee benefits and pension contributions, transportation and travel, amortization and depreciation, rent, repairs, and taxes. These expenses are usually subdivided into selling expenses and administrative and general expenses.

,The formula for operating expenses ratio is

$$\text{Operating Expenses Ratio} = \frac{\text{Operating Expenses}}{\text{Total Assets}}$$

Assets Composition Ratio

Bank loans (ACR) are expected to be the main source of income and are expected to have a positive impact on bank performance. Other things constant, the more deposits are transformed into loans, the higher the interest margin and profits. However, if a bank needs to increase risk to have a higher loan-to-asset ratio, then profits may decrease. In addition, as bank loans are the

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principal source of income, it is expected that noninterest bearing assets impact negatively on profits.

,The formula for assets composition ratio is

$$\text{Assets Composition Ratio} = \frac{\text{Total Loan}}{\text{Total Assets}}$$

Credit Risk Ratio

The amount of debt owed on revolving lines of credit relative to the total amount of all available credit limits on all revolving accounts. Lenders assume that borrowers with a lower debt to credit ratio are more likely to be using credit responsibly and less likely to default. A debt to credit ratio below 30% is considered good.

,The formula for credit risk ratio is

$$\text{Credit Risk Ratio} = \frac{\text{Non performing loans}}{\text{Total loan}}$$

Credit Deposit Ratio

The amount of a bank's loans divided by the amount of its deposits at any given time is called credit deposit ratio. The higher the ratio, the more the bank is relying on borrowed funds, which are generally more costly than most types of deposits.

,The formula for credit-deposit ratio is

$$\text{Credit-Deposit Ratio} = \frac{\text{Total Credits}}{\text{Total Deposits}}$$

The profitability ratios of return on assets return on equity and net profits were gathered for six years 2011 to 2015. Likewise, some financial ratios such as CAR, OER, ACR, CR and CDR were also gathered for the same periods. It is expected that CAR, ACR and CDR will raise the bank's profitability whereas OER and CR would lower down the profitability of commercial banks.

The relationship between return on assets, return on equity and net profit and selected five financial ratios can be expressed by the following formula:

$$\text{ROA} = \alpha + \beta_1 \text{CAR} + \beta_2 \text{OER} + \beta_3 \text{ACR} + \beta_4 \text{CR} + \beta_5 \text{CDR} + \dots + e_t \qquad (1)$$

$$\text{ROE} = \alpha + \beta_1 \text{CAR} + \beta_2 \text{OER} + \beta_3 \text{ACR} + \beta_4 \text{CR} + \beta_5 \text{CDR} + \dots + e_t \qquad (2)$$

$$\text{NP} = \alpha + \beta_1 \text{CAR} + \beta_2 \text{OER} + \beta_3 \text{ACR} + \beta_4 \text{CR} + \beta_5 \text{CDR} + \dots + e_t \qquad (3)$$

Where,

ROA=Return on Assets, ROE=Return on equity, NP= Net profits α = intercept of dependent variable, $\beta1$, $\beta2$, $\beta3$, $\beta4$, $\beta5$are constants i.e., slopes of ROA CAR=Capital Adequacy Ratio, OER= Operating Expenses Ratio, ACR=Assets composition ratio, CR=Credit Risk Ratio, CDR=Credit Deposit Ratio and et= Error term

Table 1
Regression result: ROA as dependent variable

$(ROA)_{it}$	$= \beta_0$	$+ \beta_1(CAR)_{it}$	$+ \beta_2(OER)_{it}$	$+ \beta_3(ACR)_{it}$	$+ \beta 4(CR)_{it}$	$+ \beta5(CDR)_{it}+$	$+(e)_{it}$
	=3.73**	-0.08CAR**	-0.29OER*	-0.06ACR**	-0.07CR	+0.08CDR*	
S.E.	= (2.64)	(0.04)	(0.07)	(0.02)	(0.89)	(0.03)	
t	= (1.41)	(-1.79)	(-4.14)	(-2.94)	(-0.78)	(2.67)	
	R^2=0.51	F(5,54)=5.63	DW=1.98				
	Number of obs. 60		d.f.=54				

Note: * Significant at 0.01 levels
    ** Significant at 0.05 levels
    i= 1, 2, 3, ... commercial banks
    t=1, 2, 3... year.

The present study hypothesized that CAR, ACR and CDR factors have significant positive relation with ROA whereas OER and CR have negative relation with ROA. The regression result shows that out of five independent variables, the sign of three independent variables namely OER, CR and CDR are as per expectation. The signs of CAR and ACR showed a negative impact on ROA which is just the opposite as per priori. The regression results from multiple regression models explain that the explanatory power of the model is reasonably high given as the R^2 is estimated at 51%. The F statistic is also statistically significant at 5 percent. The value of DW 1.98 indicates that there is no autocorrelation. It means that other variables keeping constant one unit (ratio) increases in operating expenses ratio will decrease by 0.29 units (ratio) in ROA.

Similarly, keeping other variables constant, one unit (ratio) increase in CDR will increase by 0.08 units (ratio) in ROA. Similarly, one unit (ratio) increases in ACR will decrease by 0.06 units (ratio) in ROA by keeping other variables constant. There is no significant positive relation between CR and ROA.

Table 2

Regression result: ROE as dependent variable

ROE_{it}	$=\beta_0$	$+\beta_1(CAR)it$	$+\beta_2(OER)it$	$+\beta_3(ACR)it$	$+\beta_4(CR)it$	$+\beta_5(CDR)it$	$+....+et_{it}$
	=144.57*	- 2.18CAR**	-2.67OER*	-1.14ACR	+2.09CR	+0.25CDR*	
S.E	= (38.95)	(1.25)	(0.53)	(1.41)	(2.78)	(0.06)	
t	=(3.71)	(-1.74)	(-5.04)	(-0.81)	(0.75)	(4.16)	
	R^2=0.58	F(5,54) =12.85	D.W.=1.96				
Number of obs.			d.f. =54				
60							

Note: * Significant at 0.01 levels
** Significant at 0.05 levels
i= 1, 2, 3, ...commercial banks
t=1, 23,.....year.

It is estimated that CAR, ACR and CDR factors have significant positive relation with ROE whereas OER and CR have negative relation with ROE. The regression result shows the sign of two independent variables namely OER and CDR are as per expectation. The signs of CAR, ACR and CR showed a negative impact on ROE which is just the opposite as per expectation.

Above table depicts regression results from multiple regression models. Here, the explanatory power of the model is reasonably high given by the R^2 at 0.58 for the ROE model. The F statistic of this model is statistically significant at 1 percent. The value of DW 1.96 indicates that there is no autocorrelation. It means, keeping other variables constant, one unit (ratio) increases in operating expenses ratio will decrease by 2.67 units (ratio) in ROE. Similarly, keeping other variables constant, one unit (ratio) increase in CDR will increase by 0.25 units (ratio) in ROE. There are no significant positive relation of ACR and CR on ROE.

Table 3

Regression result: Net profits as dependent variable

$(NP)_{it}$	$= \beta0$	$+ \beta_1(CAR)_{it}$	$+ \beta_2(OER)_{it}$	$+ \beta_3(ACR)_{it}$	$+ \beta_4(CR)_{it}$	$+ \beta_5(CDR)_{it}$	$+...+et_{it}$
	=1773.56*	- 62.57CAR*	-50.31ER	-80.46ACR*	-18.62CR	+55.87CDR*	
S.E.	= (304.74)	(14.32)	(47.09.00)	(23.58)	(14.47)	(16.39)	
t	=(5.82)	(-4.37)	(-1.07)	(-3.41)	(-1.29)	(3.38)	
	R^2=0.78	F(5,54) = 14.74	DW = 2.05				
	Number of obs.=60		d.f.=54				

i= 1, 2, 3, ...commercial banks
t=1, 23,.....year.
Note: * Significant at 0.01 levels
** Significant at 0.05 levels

This study predicted that CAR, ACR and CDR factors have significant positive relation with net profit whereas OER and CR have negative relation with net profit. The regression result shows that out of five independent variables, the sign of three independent variables namely OER, CR and CDR are as per expectation. The signs of CAR and ACR showed a negative impact on net profit which is just the opposite as per priori.

The explanatory power of the model is very high given by the R^2 at 0.78 for the net profits model. The F statistic of this model is also statistically significant at 1 percent. The value of DW 2.05 indicates that there is no autocorrelation It means that other variables keeping constant one unit (ratio) increases in capital adequacy ratio will decrease by Rs. 62.57 million in net profit. Similarly, keeping other variables constant, one unit (ratio) increase in CDR will increase by Rs. 55.87 million in net profit. There are no significant positive relations of OER and CR on net profit.

CONCLUSION

Based on the results of the empirical analysis, bank-specific determinants such as capital adequacy ratio, operating expenses ratio, assets composition ratio, credit risk ratio and credit deposit ratio are able to explain significant part of bank profitability in Nepal. The regression result confirms that a high credit deposit ratio is affecting profit through translating the safety advantage into profit. The study also concludes that the lending activities in commercial banking sector are associated with profit, and in order to maximize the profit, commercial banks in Nepal maintaining sizable volume of lending activities.

Another finding of the study is that the operating expenses are associated with significant inverse relationship with profitability in commercial banks. An increased operating expense in Nepalese banking sector is lowering profits. So, to improve the profitability of Nepalese banks, banks should work to improve the efficiency of cost management, which according to the analysis crucially affect profits of Nepalese banks. Finally, the study concludes that the amount of impact of the bank-specific determinants on bank's profitability varies from bank to bank.

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