Effect of Capital Adequacy Ratio, Non-Performing Loan, Base Rate, Spread Rate and Loan to Deposit Ratio on Profitability of Nepalese Commercial Banks

Samir DC*

Abstract

This study examines the effect of capital adequacy ratio, non-performing loan, base rate, spread rate and loan to deposit ratio on the profitability of Nepalese commercial banks. Return on assets and return on equity are the selected dependent variables. The selected independent variables are capital adequacy ratio, non- performing loan, base rate, spread rate, loan to deposit ratio and loan loss provision. The study is based on secondary data of 19 commercial banks with 209 observations for the study period from 2012/13 to 2022/23. The data were collected from Banking and Financial Statistics published by Nepal Rastra Bank, the annual report of respective banks and audited financial statement of the selected commercial banks. The correlation coefficients and regression models are estimated to test the significance and importance of capital adequacy, profitability, non-performing loan, base rate, spread rate, and loan to deposit ratio on the profitability of Nepalese commercial banks.

The study showed that capital adequacy ratio has a positive effect on return on assets and return on equity. It means that increase in capital adequacy ratio leads to increase in return on assets and return on equity. In addition, non-performing loan has a negative effect on return on assets and return on equity. It means that increase in non-performing loan leads to decrease in return on assets and return on equity. Likewise, base rate has a negative effect on return on assets and return on equity. It shows that higher the base rate, lower would be the return on assets and return on equity. However, spread rate has a positive effect on return on assets. It indicates that increase in spread rate leads to increase in return on assets. In addition, loan to deposit ratio has a positive effect on return on equity. It indicates that increase in loan to deposit ratio leads to increase in return on equity. Similarly, loan loss provision has a negative effect on return on assets and return on equity. It means that higher the loan loss provision, lower would be the return on assets and return on equity.

Keywords: bank performance, capital adequacy ratio, non-performing loan, spread rate, loan to deposit ratio, base rate

1.Introduction

The banking system plays an important role in the modern economic world. Bank is an institution or company whose activities are to collect funds in the form of demand deposits, savings deposits and other deposits from parties who have excess funds (surplus spending units) and then place them

* Mr. DC is a Freelance Researcher, Kathmandu, Nepal. E-mail: dc22samir@gmail.com

back to people who need funds (deficit spending units) through the sale of financial services which in turn can improve the welfare of the people at large (Damayanti and Savitri, 2018). It plays vital role in capital formation, which is essential for the economic development of a country. They mobilize the small savings of the people scattered over a wide area through their network of branches all over the country and make it available for productive purposes. Thus, the banks play a crucial role in the creation of new capital (or capital formation) in a country and thus help the growth process. The banking industry has a significant role in creating equity and supporting economic growth. However, the quantity of banks is increasing day by day, creating a tight gap, where lowers the performance of a bank because it is unable to compete in the market. The capital adequacy ratio (CAR) is a crucial indicator of a bank's financial health and a key pillar of a stable financial system. It acts like a safety net, ensuring that banks have enough capital to absorb potential losses and remain operational even during challenging economic times (Dadhich et al., 2020). Broadly, the capital adequacy ratios can help ensure the efficiency and stability of a nation's financial system by lowering the risk of banks collapsing. A bank with a high capital adequacy ratio is considered safe and likely to meet its financial commitments. A higher CAR incentivizes banks to adopt more cautious lending practices. Knowing they have limited capital to absorb losses, banks are more likely to thoroughly assess borrowers' creditworthiness and avoid excessive risk-taking in their lending activities. Strong CARs across the banking sector make the entire financial system more resilient to systemic shocks and crises. Even if some banks encounter difficulties, the overall system is better equipped to absorb the impact and prevent widespread contagion (Pasha et al., 2012).

Commercial banks' profitability is important because the soundness of an industry is closely connected to soundness of the whole economy. Profitability of the banking sector is also central as the well-being of the industry is closely associated with the wellness of the whole economy in general. Thus, a proficient and productive banking sector is able and better placed to endure negative economic shocks. Syafrizal *et al.* (2023) analyzed effect of capital adequacy ratio, non performing financing, financing to deposit ratio, operating expenses and operational income on profitability at PT Sharia Aceh Bank. The results of this study indicated that the capital adequacy ratio partially has no impact, non-performing financing partially has a positive and significant effect, financing to deposit ratio partially has negative and significant effect on profitability at PT Sharia Aceh Bank. Similarly, Hersugondo *et al.* (2021) examined the role of non-performing asset, capital, adequacy and insolvency

risk on bank performance in Indonesia. The result of the study showed that non-performing assets has negative impact on bank performance. the result also showed that capital adequacy ratio has negative impact on both ROA and ROE as bank profitability. Moreover, Sebayang (2020) assessed the impact of the capital adequacy ratio, non-performing loan against to return on equity in Indonesia. The results showed that there is an increase in capital adequacy ratio that will be able to increase the return on equity of foreign private banks in Indonesia. Increased non-performing loans could have a positive effect and increase return on equity.

The survival and continuity of the banking business mostly depend on the level of its ability to gain profit while the stability of the banking sector has been a major concern for the economy. The banking sector possesses different kinds of threats and risks. A fragile funding basis accompanied by high exposure to market risk in an environment of reforms and macroeconomic disturbances is the typical precursor of bank distress. Islam and Nishiyama (2016) analyzed the bank-specific, industry specific and macroeconomics specific determinants of bank profitability of 259 commercial banks in the South Asian countries (Bangladesh, India, Nepal and Pakistan) for the period of 1997-2012. The study found that cost of fund, liquidity, funding gap, term structure of interest rate and economic growth rate have negative impact while rate of inflation had positive impact on bank profit. Ding and Essounga-Njan (2012) investigated the impact of higher interest spread on the performance of banks in China. Based on panel data between 1995 and 2006 from 13 commercial banks in China, the study found that there was positive impact of interest rate spread on bank profitability. Owusu-Antwi *et al.* (2017) assessed interest rate spread on bank profitability: The case of Ghanaian banks. The study showed that bank-specific factors play a significant role in the determination of interest rate spreads in the Ghanian banking sector. The study also found that there is a positive impact of interest rate spread on return on asset.

A profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system. The profitability of a financial institution is affected by numerous factors. These factors include elements internal to each financial institution and several important external forces shaping earnings performance. Rizal and Rofiqo (2020) examined the effect of Sharia banking characteristics such as capital adequacy ratio, financing to deposit ratio, non-performing financing, operating expenses to operations revenue on return on assets. The analysis showed that the capital

adequacy ratio, non-performing financing, operating expenses to operations revenue variables significantly influence return on assets, but financing to deposit ratio has no effect on return on assets. Salami and Uthman (2018) examined the impact of bank capital and stability on financial performance of banks. The study showed that there has a negative relationship between cost to income ratio and profitability and stability of banks. The study also found that operating efficiency measured by cost-to income ratio has negative impact on bank performance. Al-Sharkas and Al-Sharkas (2022) assessed the potential impact of capital adequacy ratios on bank profitability in a Jordanian context by using static panel data for a sample of 24 banks covering the period 2008–2018. The study revealed that ROE is positively affected by both core capital to risk-weighted assets ratio and total capital to risk weighted assets ratio. Capraru and Ihnatov (2014) evaluated the main determinants of profitability in five selected Central and Eastern European countries over the period 2004–2011, by using return on assets, return on equity, and net interest margin as proxies for bank profitability. the study revealed that management efficiency and capital adequacy growth influence bank profitability for all performance indicators, while credit risk and inflation impact only return on assets and return on equity. The result also showed that banks tend to be more profitable if higher capital adequacy is enforced. The safety and solvency of the banking institutions are related to the banks' capital. Spaseska et al. (2022) analyzed the impact of the capital adequacy ratio on the banks' profitability in North Macedonia. The empirical study is based on the utilization of the Auto-Regressive Distributed Lag (ARDL) method for time series analysis via EViews v10. The results of the study have showed that there is a positive, yet statistically insignificant relationship between the Capital Adequacy Ratio (CAR) and the Return on Average Assets (ROAA) of the Macedonian banks, both in the short- and long-run.

In the context of Nepal, Thapa and Bhandari (2023) examined risk management and its impact on profitability of commercial banks in Nepal. The result showed that capital adequacy ratio is positively related to return on assets. Likewise, the study revealed that current ratio is positively related to return on assets and return on equity. However, the study revealed that capital adequacy ratio is negatively related to return on equity. Likewise, the study revealed that credit to deposit ratio, non-performing loan ratio, cash reserve ratio and liquid assets ratio are negatively related to return on assets and return on equity. Shrestha (2023) examined impact of firm-specific factors on the financial performance of Nepalese microfinance institutions. The study observed that capital adequacy ratio, deposit ratio, management efficiency,

and interest spread rate have positive and loan ratio and assets quality has negative impact on financial performance measured by return on assets (ROA) of Nepalese MFIs. Moreover, Budhathoki and Rai (2020) examined the effect of specific factors on bank profitability: evidence from Nepalese banks. The study examined the impact of assets quality, capital adequacy ratio, assets diversification and operating efficiency on banks' profitability. The results showed that three predictor variables assets quality, operating efficiency, and capital adequacy ratio significantly affect bank profitability. Likewise, loan loss provision and capital adequacy ratio had negative impact on bank profitability measured on ROA.

The above discussion shows that empirical evidences vary greatly across the studies concerning the effect of capital adequacy ratio, non-performing loan, base rate, spread rate and loan to deposit ratio on profitability. Though there are above mentioned empirical evidences in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, in order to support one view or the other, this study has been conducted.

The main purpose of the study is to analyze the effect of capital adequacy ratio, non-performing loan, base rate, spread rate and loan to deposit ratio on profitability of Nepalese commercial banks. Specifically, it examines the relationship of capital adequacy ratio, non-performing loan, base rate, spread rate, loan to deposit ratio and loan loss provision on return on assets and return on equity of Nepalese commercial banks.

The remainder of this study is organized as follows. Section two describes the sample, data and methodology. Section three presents the empirical results and the final sections draws conclusion.

2. Methodological aspects

The study is based on the secondary data which were gathered from 19 Nepalese commercial banks from 2012/13 to 2022/23, leading to a total of 209 observations. The study employed convenience sampling method. The main sources of data include Banking and Financial Statistics published by Nepal Rastra Bank, the annual report of respective banks and audited financial statement of the selected commercial banks. This study is based on descriptive as well as causal comparative research designs. Table 1 shows the list of commercial banks selected for the study along with the study period and number of observations.

Table 1

List of commercial banks selected for the study along with study period and number of observations

S.N.	Name of the commercial banks	Study period	Observations
1	Nepal Bank Limited	2012/13 - 2022/23	11
2	Rastriya Banijya Bank Limited	2012/13 - 2022/23	11
3	Agricultural Development Bank Limited	2012/13 - 2022/23	11
4	Nabil Bank Limited	2012/13 - 2022/23	11
5	Standard Chartered Bank Nepal Limited	2012/13 - 2022/23	11
6	Himalayan Bank Limited	2012/13 - 2022/23	11
7	Nepal SBI Bank Limited	2012/13 - 2022/23	11
8	Everest Bank Limited	2012/13 - 2022/23	11
9	NIC Asia Bank Limited	2012/13 - 2022/23	11
10	Machhapuchchhre Bank Limited	2012/13 - 2022/23	11
11	Kumari Bank Limited	2012/13 - 2022/23	11
12	Laxmi Sunrise Bank Limited	2012/13 - 2022/23	11
13	Siddharth Bank Limited	2012/13 - 2022/23	11
14	Global IME Bank Limited	2012/13 - 2022/23	11
15	Citizens Bank International Limited	2012/13 - 2022/23	11
16	Prime Commercial Bank Limited	2012/13 - 2022/23	11
17	NMB Bank Limited	2012/13 - 2022/23	11
18	Prabhu Bank Limited	2012/13 - 2022/23	11
19	Sanima Bank Limited	2012/13 - 2022/23	11
Total number of observations			209

Thus, the study is based on the 209 observations.

The model

The model used in this study assumes that bank performance depends on various financial ratios and indicators. The dependent variables selected for the study are return on assets and return on equity. Similarly, the selected independent variables in this study are capital adequacy ratio, non-performing loan, base rate, spread rate, loan to deposit ratio and loan loss provision. Therefore, the models take the following forms:

$$ROA_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 NPL_{it} + \beta_3 BR_{it} + \beta_4 SR_{it} + \beta_5 CD_{it} + \beta_6 LLP_{it} + e_{it}$$

$$ROE_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 NPL_{it} + \beta_3 BR_{it} + \beta_4 SR_{it} + \beta_5 CD_{it} + \beta_6 LLP_{it} + e_{it}$$

Where,

ROA = Return on assets as measured by the ratio of net income to total assets, in percentage.

ROE = Return on equity as measured by the ratio of net income to total shareholders' equity, in percentage.

CAR = Capital adequacy ratio as measured by the ratio of total bank capital to total risk weighted assets, in percentage.

NPL = Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage.

BR = Base rate as measured by the ratio of cost of doing banking business to total deposits, in percentage.

SR = Spread rate as measured by net weighted interest difference between interest received from loan and interest paid to deposit, in percentage.

CD = Loan to deposit ratio as measured by the ratio of total loan to total deposit, in percentage.

LLP = Loan loss provision as measured by the ratio of sum of provisions set for the loans created to total loans, in percentage.

The following section describes the independent variables used in this study along with hypothesis formulation.

Capital adequacy ratio

Capital adequacy ratio stands as a pivotal measure of a bank's financial robustness and resilience. A higher CAR implies a larger buffer against loan defaults, investment losses, and other financial setbacks. This makes it less likely for a bank to become insolvent and unable to meet its obligations to depositors, creditors, and other stakeholders. Chou and Buchdadi (2016) showed that there is a positive impact of capital adequacy ratio on return on asset. Sebayang (2020) also found that capital adequacy ratio has a positive effect on return on equity. According to Anggari et al. (2020), capital adequacy ratio has a positive and insignificant effect on the profitability of banking companies in the Indonesia stock exchange during 2016–2018 periods. Based on it, this study develops the following hypothesis:

H_1: There is a positive relationship between total capital adequacy ratio and profitability.

Non-performing loan

Non-performing loan is a critical indicator of a lending institution's asset quality and financial stability. The level of NPLs in a bank's portfolio is closely monitored, as it serves as a key metric reflecting the quality of loans and has implications for the overall financial health of the institution. Brastama and Yadnya (2020) found that NPL has a negative impact on ROA. Moreover, Vinh (2017) stated that an increase in NPL can lead banks to reduce their profitability in the context of Vietnamese commercial banks over the period 2005 to 2015. Likewise, Swandewi et al. (2021) showed that there is a negative impact of non-performing loans on bank profitability. Collaku and Aliu (2021) found that NPL has a negative impact on ROA. Based on it, this study develops the following hypothesis:

H_2: There is a negative relationship between non-performing loan and profitability.

Base rate

Base rate emerges as a pivotal benchmark, shaping the interest rate structure within a country's banking system. This benchmark plays a crucial role in influencing lending and deposit rates, with actual lending rates usually set as a certain percentage above the base rate. Banks borrow money at lower rates from depositors and lend it out at higher rates to borrowers. When the base rate increases, the cost of funding for banks (deposit rates) typically rises slower than lending rates, widening the gap between the two and leading to a higher net interest margin. This translates to increased profits for the bank (Shah and Khan, 2017). Yusuf and Isa (2021) showed that base rate has a positive impact on ROA. This means that the bank's profitability increased due to the increase in the base rate. Owusu-Antwi et al. (2017) revealed that higher base rates often indicate a growing economy, which typically leads to increased demand for loans from businesses and consumers. This increased lending activity further boosts bank profitability. Based on it, this study develops the following hypothesis:

H_3: There is a positive relationship between base rate and profitability.

Spread rate

Spread rate represents the percentage difference between the interest income accrued from loans and investments and the interest paid on deposits and borrowings (Ho and Saunders, 1981). A higher spread rate suggests a more profitable operation, showcasing the institution's adeptness in generating

income from its interest-bearing assets. Musah et al. (2018) showed that there is a positive impact of interest rate spread on return on assets as bank profitability in Ghana. It means that banks charge higher interest margin to maximize profitability. Likewise, Sukmadewi (2020) revealed that the net interest margin has a positive impact on return on assets. Owusu-Antwi et al. (2017) identified that there was positive impact of interest rate spread on return on asset. Similarly, Ding and Essounga-Njan (2012) showed that there was positive impact of interest rate spread on bank profitability. Based on it, this study develops the following hypothesis:

H_4: There is a positive relationship between spread rate and profitability.

Loan to deposit ratio

Banks essentially act as financial intermediaries, channeling deposits into loans. A higher loan to deposit ratio reflects efficient utilization of available funds, boosting operational efficiency and profitability. Hapsari (2018) showed that loan to deposit ratio had a positive impact toward financial performance. Moreover, Liyana and Indrayani (2020) found that loan to deposit ratio has positive impact on return on assets. A higher LDR can indicate increased lending activity, contributing to economic development and creating a positive feedback loop for bank profitability. Likewise, Hadian (2021) stated that LDR had positive impact on return on assets. Similarly, Yuhasril (2019) stated that loan to deposit ratio has positive impact on return on assets. In addition, Steven and Toni (2020) also found that loan to deposit ratio had positive impact on profitability measured by ROA. Based on it, this study develops the following hypothesis:

H_5: There is a positive relationship between loan to deposit ratio and profitability.

Loan loss provision

Loan loss provision is the total accumulated fund that is allocated by an organization for the protection of possible losses arises from total loan created. Mennawi (2020) found that there is a significant negative impact of loan loss provision on the financial performance of Islamic banks in Sudan. Similarly, Islam (2018) showed that loan loss provision as an important factor in affecting profitability of banks in ideal condition. A well establish bank is supposed to be having less loan loss provision and higher profitability. Likewise, Alhadab and Alsahawneh (2016) found that loan loss provision has a negative impact on the profitability of Jordanian commercial banks. In

addition, Teshome et al. (2018) found negative and statistically significant effect of loan loss provision on the bank profitability. Moreover, Annor and Obeng (2017) concluded that there is a significant adverse affiliation of loan loss provision with profitability of commercial banks listed on the Ghana stock exchange. Based on it, this study develops the following hypothesis:

H_6: There is a negative relationship between loan loss provision and profitability.

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of the selected dependent and independent variables during the period 2012/13 to 2022/23.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 19 Nepalese commercial banks for the study period from 2012/13 to 2022/23. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percentage). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total bank capital to total risk weighted assets, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage), BR (Base rate as measured by the ratio of cost of doing banking business to total deposit, in percentage), SR (Spread rate as measured by net weighted interest difference between interest received from loan and interest paid to deposit, in percentage), CD (Loan to deposit ratio as measured by the ratio of total loan to total deposit, in percentage) and LLP (Loan loss provision as measured by the ratio of sum of provisions set for the loans created to total loans, in percentage).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	0.45	3.25	1.56	0.50
ROE	-361.36	102.96	14.22	27.68
CAR	-0.49	23.31	13.35	2.60
NPL	0.01	24.19	1.83	2.12
BR	4.17	11.78	8.46	1.73
SR	2.94	7.32	4.31	0.71
CD	44.27	90.13	75.42	6.76
LLP	0.49	9.82	2.64	1.49

Source: SPSS output

Correlation analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed and the results are presented in Table 3.

Table 3

Pearson's correlation coefficients matrix

This table shows the bivariate Pearson's correlation coefficients of dependent and independent variables of 19 Nepalese commercial banks for the study period from 2012/13 to 2022/23. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percentage). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total bank capital to total risk weighted assets, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage), BR (Base rate as measured by the ratio of cost of doing banking business to total deposit, in percentage), SR (Spread rate as measured by net weighted interest difference between interest received from loan and interest paid to deposit, in percentage), CD (Loan to deposit ratio as measured by the ratio of total loan to total deposit, in percentage) and LLP (Loan loss provision as measured by the ratio of sum of provisions set for the loans created to total loans, in percentage).

Variables	ROA	ROE	CAR	NPL	BR	SR	CD	LLP
ROA	1							
ROE	0.180**	1						
CAR	0.291**	0.222**	1					
NPL	-0.029	-0.058	-0.248**	1				
BR	-0.184**	-0.079	0.124	0.010	1			
SR	0.358**	-0.223**	-0.101	0.354**	-0.034	1		
CD	-0.201**	0.022	0.203**	-0.210**	0.379**	-0.164*	1	
LLP	-0.026	-0.100	-0.296**	0.738**	-0.015	0.365**	-0.221**	1

Note: The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent levels respectively.

Table 3 shows that capital adequacy ratio has a positive relationship with return on assets. It means that increase in capital adequacy ratio leads to increase in return on assets. In addition, there is a negative relationship between non-performing loan and return on assets. It means that increase in non-performing loan leads to decrease in return on assets. Likewise, base rate has a negative relationship with return on assets. It shows that lower the base rate, higher would be the return on assets. However, there is a positive relationship between spread rate and return on assets. It indicates that increase in spread rate leads to increase in return on assets. In addition, loan to deposit

ratio has a negative relationship with return on assets. It indicates that increase in loan to deposit ratio leads to decrease in return on assets. Similarly, there is a negative relationship between loan loss provision and return on assets. It means that higher the loan loss provision, lower would be the return on assets.

Likewise, the result also shows that capital adequacy ratio has a positive relationship with return on equity. It means that increase in capital adequacy ratio leads to increase in return on equity. In contrast, there is a negative relationship between non-performing loan and return on equity. It means that increase in non-performing loan leads to decrease in return on equity. Likewise, base rate has a negative relationship with return on equity. It shows that higher the base rate, lower would be the return on equity. However, there is a positive relationship between spread rate and return on equity. It indicates that increase in spread rate leads to increase in return on equity. In addition, loan to deposit ratio has a positive relationship with return on equity. It indicates that increase in loan to deposit ratio leads to increase in return on equity. Similarly, there is a negative relationship between loan loss provision and return on equity. It means that higher the loan loss provision, lower would be the return on equity.

Regression analysis

Having indicated the Pearson's correlation coefficients, the regression analysis has been carried out and the results are presented in Table 4 and Table 5. More specifically, Table 4 shows the regression results of capital adequacy ratio, non-performing loan, base rate, spread rate, loan to deposit ratio and loan loss provision on bank performance of Nepalese commercial banks.

Table 4

Estimated regression results of capital adequacy ratio, non-performing loan, base rate, spread rate, loan to deposit ratio and loan loss provision on return on assets

The results are based on panel data of 19 commercial banks with 209 observations for the period of 2012/13 to 2022/23 by using linear regression model. The model is ROAit = β 0 + β1 CARit + β2 NPLit + β3 BRit + β4 SRit + β5 CDit + β6 LLPit + eit where, the dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total bank capital to total risk weighted assets, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage), BR (Base rate as measured by the ratio of cost of doing banking business to total deposit, in percentage), SR (Spread rate as measured by net weighted interest difference between interest received from loan and interest paid to deposit, in percentage), CD (Loan to

deposit ratio as measured by the ratio of total loan to total deposit, in percentage) and LLP (Loan loss provision as measured by the ratio of sum of provisions set for the loans created to total loans, in percentage).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		CAR	NPL	BR	SR	CD	LLP			
1	0.81 (4.62)**	0.06 (4.37)**						0.08	0.48	19.13
2	1.57 (34.13)**		-0.01 (0.42)					0.01	0.51	0.18
3	2.02 (11.70)**			-0.05 (2.69)**				0.03	0.50	7.24
4	0.47 (2.37)*				0.25 (5.51)**			0.12	0.47	30.37
5	2.69 (7.01)**					-0.02 (2.95)**		0.04	0.50	8.73
6	1.59 (22.23)**						-0.01 (0.37)	0.01	0.51	0.14
7	0.76 (3.99)**	0.06 (4.40)**	-0.01 (0.66)					0.08	0.48	9.76
8	1.24 (5.35)**	0.06 (4.92)**	-0.01 (0.83)	-0.07 (3.45)**				0.12	0.47	10.81
9	2.20 (5.61)**	0.07 (5.34)**	-0.01 (0.23)	-0.04 (2.12)*		-0.02 (3.02)**		0.16	0.46	10.70
10	2.15 (5.26)**	0.07 (5.33)**	-0.01 (0.15)	-0.04 (2.12)		-0.02 (2.97)**	-0.01 (0.44)	0.15	0.46	8.57
11	0.87 (2.04)*	0.07 (5.67)**	-0.02 (0.99)	-0.04 (2.29)*	0.29 (6.42)**	-0.01 (2.74)**	-0.02 (0.54)	0.29	0.42	15.43

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Return on assets is the dependent variable.

Table 4 shows that the beta coefficients for capital adequacy ratio are positive with return on assets. It indicates that capital adequacy has a positive impact on return on assets. This finding is consistent with the findings of Chou and Buchdadi (2016). Likewise, the beta coefficients for non-performing loan are negative with return on assets. It indicates that non-performing loan has a negative impact on return on assets. This finding is consistent with the findings of Brastama and Yadnya (2020). However, the beta coefficients for base rate are negative with return on assets. It indicates that base rate has a negative impact on return on assets. This finding is consistent with the findings of Yusuf and Isa (2021). Similarly, the beta coefficients for spread rate are positive with return on assets. It indicates that spread rate has a positive impact on return on assets. This finding contradicts with the findings of Ding and Essounga-Njan (2012). In contrast, the beta coefficients for loan to deposit ratio are negative with return on assets. It indicates that loan to deposit ratio has a negative impact on return on assets. This finding is consistent with the findings of Yuhasril (2019).

Table 5 shows the regression results of capital adequacy ratio, non-performing loan, base rate, spread rate, loan to deposit ratio and loan loss provision on return on equity of Nepalese commercial banks.

Table 5

Estimated regression results of capital adequacy ratio, non-performing loan, base rate, spread rate, loan to deposit ratio and loan loss provision on return on assets of Nepalese commercial banks

The results are based on panel data of 19 commercial banks with 209 observations for the period of 2012/13 to 2022/23 by using linear regression model. The model is ROEit = β 0 + β1 CARit + β2 NPLit + β3 BRit + β4 SRit + β5 CDit + β6 LLPit + eit where, the dependent variables is ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percentage). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total bank capital to total risk weighted assets, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage), BR (Base rate as measured by the ratio of cost of doing banking business to total deposit, in percentage), SR (Spread rate as measured by net weighted interest difference between interest received from loan and interest paid to deposit, in percentage), CD (Loan to deposit ratio as measured by the ratio of total loan to total deposit, in percentage) and LLP (Loan loss provision as measured by the ratio of sum of provisions set for the loans created to total loans, in percentage).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		CAR	NPL	BR	SR	CD	LLP			
1	-17.29 (1.77)	2.36 (3.28)**						0.05	27.05	10.74
2	15.59 (6.16)**		-0.75 (0.83)					0.01	27.70	0.69
3	24.99 (2.60)**			-1.27 (1.15)				0.01	27.66	1.31
4	51.47 (4.49)**				-8.65 (3.29)**			0.05	27.05	10.84
5	7.33 (0.34)					0.09 (0.32)		0.01	27.74	0.10
6	19.11 (4.11)**						-1.85 (1.44)	0.01	27.61	2.08
7	-17.12 (1.61)	2.35 (3.16)**	-0.04 (0.04)					0.04	27.12	5.34
8	33.28 (1.91)	2.29 (3.21)**		-1.82 (1.70)	-7.96 (3.08)**			0.09	26.41	7.81
9	33.88 (1.95)	2.49 (3.40)**	-1.09 (1.16)	-1.88 (1.76)	-9.04 (3.30)**			0.09	26.39	6.20
10	34.34 (1.31)	2.49 (3.37)**	-1.09 (1.13)	-1.87 (1.62)	-9.05 (3.28)**	0.01 (0.02)		0.07	26.45	4.94
11	35.26 (1.33)	2.46 (3.28)**	-1.27 (0.98)	-1.87 (1.61)	-8.95 (3.19)**	0.01 (0.04)	-0.40 (0.21)	0.08	26.52	4.10

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Return on equity is the dependent variable.

Table 5 shows that the beta coefficients for capital adequacy ratio are positive with return on equity. It indicates that capital adequacy has a positive impact on return on equity. This finding is consistent with the findings of Anggari et al. (2020). Likewise, beta coefficients for non-performing loan are negative with return on equity. It indicates that non-performing loan has a negative impact on return on equity. This finding is consistent with the findings of Collaku and Aliu (2021). Similarly, the beta coefficients for base rate are negative with return on equity. It indicates that base rate has a negative impact on return on equity. This finding is inconsistent with the findings of Shah and Khan (2017). Moreover, the beta coefficients for spread rate are negative with return on equity. It indicates that spread rate has a negative impact on return on equity. This finding is consistent with the findings of Sukmadewi (2020). In contrast, the beta coefficients for loan to deposit ratio are positive with return on equity. It indicates that loan to deposit ratio has a negative impact on return on equity. This finding is inconsistent with the findings of Yuhasril (2019).

4. Summary and conclusion

Banking institutions, in particular, play a crucial role in shaping a nation's progress, as their development initiatives set the stage for economic growth. The stability of the banking sector emerges as a linchpin for overall economic development. Banks are the most integral part of the financial sector of any country as they dominate the financial sector by contributing much to the economic growth of the country. Soundness of a bank is the result of an assessment of the bank condition conducted on the risks and performance of the bank. Banks also play a remarkable role in generating employment opportunities, enhancing financial resources, and the overall development of a country. It contributes to enlarge the industrial activities and investment activities. Bank's financial performance is the result of the bank's internal roles, regulation, policies, activities, effectiveness, efficiency and overall performance in the monetary terms.

This study attempts to analyze the effect of capital adequacy ratio, non-performing loan, base rate, spread rate and loan to deposit ratio on the profitability of Nepalese commercial banks. The study is based on secondary data of 19 commercial banks with 209 observations for the study period from 2012/13 to 2022/23.

The study showed that non-performing loan, base rate, spread rate, and loan loss provision have negative impact on return on equity of Nepalese

commercial banks. However, capital adequacy ratio and loan to deposit ratio have positive impact on return on equity. The study showed that non-performing loan, base rate, loan to deposit ratio and loan loss provision have negative impact on return on assets of Nepalese commercial banks. However, capital adequacy ratio and spread rate have positive impact on return on assets. The study also concluded that capital adequacy ratio followed by loan to deposit ratio is the most influencing factor that explains the changes in the return on assets of Nepalese commercial banks. Similarly, the study also concluded that spread rate followed by capital adequacy ratio is the most influencing factor that explains the changes in the return on equity of Nepalese commercial banks.

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