Impact of Loan Defaults on the Profitability of Nepalese Commercial Banks

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Abstract

The study examines the effect of loan defaults on the profitability in Nepalese commercial banks. Return on assets and return on equity are selected as the dependent variables. The selected independent variables are bank size, interest spread rate, loan loss provision, non-performing loan, capital adequacy ratio, and credit to deposit ratio. The study is based on secondary data from 17 commercial banks with 102 observations for the study period from 2016/17 to 2021/22. The data were collected from Banking and Financial Statistics published by Nepal Rastra Bank, publications and websites of Nepal Rastra Bank (NRB) and annual reports of the selected commercial banks. The correlation coefficients and regression models are estimated to test the significance and importance of loan defaults and other bank specific factors on the profitability of selected Nepalese commercial banks.

This study showed that nonperforming loan has a negative impact on return on assets and return on equity. It means that increase in that nonperforming loans leads to decrease in return on assets and return on equity. In addition, loan loss provision has a negative impact on return on assets and return on equity. It means that increase in loan loss provision leads to decrease in return on assets and return on equity. Likewise, capital adequacy ratio has a positive impact on return on assets. It shows that higher the capital adequacy ratio, higher would be the return on assets. In contrast, capital adequacy ratio has a negative impact on return on equity. Moreover, credit to deposit ratio has a positive impact on return on assets. It indicates that increase in credit to deposit ratio leads to increase in return on assets. In addition, interest spread rate has a positive impact on return on assets. It indicates that increase in interest spread rate leads to increase in return on assets. Similarly, there is a positive relationship between bank size has a positive impact on return on equity. It means that larger the bank size, higher would be the return on equity.

Keywords: interest spread rate, loan loss provision, non-performing loan, capital adequacy ratio, credit to deposit ratio, return on equity, return on assets

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1. Introduction

Every good economic system of a country is highly dependent on a sound financial system. No good financial system can do without well-structured and efficient financial institutions specifically the banking industry. In the intricate landscape of the financial world, the symbiotic relationship between lending institutions and borrowers shapes the foundation of economies. Commercial banks, as crucial intermediaries, extend credit to individuals and businesses, facilitating growth and fostering financial stability. Loan default is a critical concern for commercial banks worldwide as it can significantly affect their profitability and overall financial stability (Vinh, 2017). Loan default occurs when borrowers fail to fulfill their repayment obligations, which can have direct and indirect consequences on the profitability of commercial banks. The banking sector plays a pivotal role in the economic development of any country by providing financial intermediation and fostering economic growth. One of the main functions of financial institutions is to link the surplus and the deficit units in an economy or financial intermediation. Gizaw et al. (2015) opined that the banks intermediation services are exceptional because of their unique ability to finance production by lending their own debt to agents willing to accept it as one of its sources of fund. The efficiency of the bank's performance is a function of how they are able to satisfy their customers at a minimum risk level and maximum profitability level. One of the risk factors is the non-performing loans granted by these banks.

In today's fast-moving business environment, banks are exposed to a large number of risks such as credit risk, liquidity risk, market risk, operational risk, exchange risk etc. Due to such exposure to various risks, efficient risk management is required. Managing risk is one of the basic tasks to be done, once it has been identified and known. Shafiq and Nasr (2010) argued that managing a risk in advance is far better than waiting for its occurrence. The importance of non-performing loans (NPL) is ambiguous as banks fear that their lending behavior will suffer disadvantages and if an increase in NPLs exceeds expected levels, this will impact negatively on the bank profitability (Banker *et al.,* 2010). The credit function of banks enhances the ability of investors to exploit desired profitable ventures. Credit creation is the main income generating activity of banks. However, it exposes the banks to credit risk Credit risk is the exposure faced by banks when a borrower (customer) defaults in honoring debt obligations on due date or at maturity (Alalade et al., 2014). This risk interchangeably called 'counterparty risk' is capable of putting the bank in distress if not adequately managed. The extent to which

a bank extends credit to the public for productive activities accelerates the pace of a nation's economic growth and its long-term sustainability. Credit risk is by far the most significant risk faced by banks and the success of their business depends on accurate measurement and efficient management of this risk to a greater extent than any other risks (Tehulu and Olana, 2014). The main source of credit risk includes, limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, direct lending, massive licensing of banks, poor loan underwriting, laxity in credit assessment, poor lending practices, government interference and inadequate supervision by the central bank. An increase in bank credit risk gradually leads to liquidity and solvency problems (Dedu and Oduro, 2013).

Loan default negatively impacts a bank's financial health, erodes its capital, increases provisioning costs, and potentially leads to liquidity and solvency issues (Rajan and Dhar, 2020). Efficient credit risk management is crucial for minimizing loan default. Effective credit assessment, risk monitoring, and early intervention mechanisms can help banks prevent or mitigate the impact of loan defaults on profitability (Altman and Saunders, 1998). Loan default necessitates higher loan loss provisions, impacting a bank's income statement and profitability. Insufficient provisioning not only affects current earnings but can also lead to capital erosion, affecting a bank's capital adequacy and long-term profitability (Mollah et al., 2017). Epure and Lafuente (2012) examined bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin. Al-Khouri (2011) assessed the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets.

Non-performing loans are among the main causes of the problems of economic stagnation. The large amount of non-performing loans in the banking system generally results in a bank failure. Commercial banks play important role for the development of the countries through the resource

mobilization. Without sound and effective regulation, financial systems can become unstable, triggering crises that can devastate the real economy. Among the threats faced by the banks, however, credit risk is considered to be the most critical risk because large sums of bank earnings come from credit as a result of interest paid on credit. Anggriani and Muniarty (2020) examined the effect of non-performing loans (NPL) and capital adequacy ratio (CAR) on profitability (ROA) at PT. Bank Central Asia (BCA), TBK. Ilomata. The study revealed that banks should lower the level of non-performing loan to increase return on assets suggesting a negative relationship between non-performing loan and profitability. Suyanto (2021) assessed the effect of bad credit and liquidity on bank performance in Indonesia. The study revealed a negative association between non-performing loan and profitability. Moreover, Brastama and Yadna (2020) analyzed the effect of capital adequacy ratio and non-performing loan on banking stock prices with profitability as intervening variable. The result showed that non-performing loan is negatively related to profitability. Moreover, Uddin (2022) investigated the impact of leverage, operating efficiency, non-performing loans, and capital adequacy ratio on the profitability of commercial banks in Bangladesh. The study concluded that leverage and non-performing loans have negative and insignificant effects on profitability, at the same time operating efficiency and capital adequacy ratio have positive and insignificant and positive and significant effects on profitability.

In the context of Nepal, Acharya and Bhattarai (2019) showed that the commercial banks under consideration have been practicing poor credit risk management. This was further evidenced by the negative effect of non-performing loan ratio on bank performance and the positive effect of cost per loan assets on bank performance. In contrast to other studies, the study found that capital adequacy ratio and cash reserve have no influence on bank performance. The study also suggested that the banks establish proper credit risk management strategies by conducting sound credit evaluation procedure before granting loans to customers. These strategies include enhancing credit assessment models, implementing stringent collateral requirements, adopting effective loan restructuring practices, and strengthening debt recovery mechanisms. Advancements in technology have facilitated more efficient credit assessment, risk management, and loan recovery processes for Nepalese commercial banks. Technology-driven solutions can enhance banks' ability to predict and manage loan defaults, contributing to improved profitability (Dahal and Subedi, 2020). Likewise, Chhetri (2021) assessed the

influence of credit risk management on financial performance of Nepalese commercial banks. The study found that there is negative and statistically significant impact of non-performing loan on return on assets. Adhikari *et al*. (2020) examined the impact of bank capital, liquidity, and credit risk on the profitability of Nepalese commercial banks. The study found that liquidity ratio and non-performing loan have negative impact on profitability measured by return on assets (ROA). The study also revealed that bank capital has a significant impact on profitability of Nepalese commercial banks.

The above discussion shows that empirical evidences vary greatly across the studies on the impact of loan default on bank's 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 major objective of the study is to examine the impact of loan default on profitability of Nepalese commercial banks. More specifically, it examines the impact of bank size, interest spread rate, loan loss provision, non-performing loan, capital adequacy ratio and credit to deposit ratio on return on asset 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 section draws the conclusion.

2. Methodological aspects

The study is based on the secondary data which were gathered from 17 commercial banks for the study period from 2016/17 to 2021/22, leading to a total of 102 observations. The study employed purposive sampling method. The main sources of data include Banking and Financial Statistics published by Nepal Rastra Bank, reports published by Ministry of Finance and the annual report of respective 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 the study period and number of observations

S.N.	Name of the Bank	Years	Observation
1	Agricultural Development Bank Limited	2016/17-2021/22	6
2	Nepal Bank Limited	2016/17-2021/22	6
3	Rastriya Banijya Bank Limited	2016/17-2021/22	
4	Nabil Bank Limited	2016/17-2021/22	6
5	Himalayan Bank Limited	2016/17-2021/22	6
6	NMB Bank Limited	2016/17-2021/22	6
7	Global IME Bank Limited	2016/17-2021/22	6
8	Prabhu Bank Limited	2016/17-2021/22	6
9	Prime Commercial Bank Limited	2016/17-2021/22	6
10	Citizens Bank International Limited	2016/17-2021/22	6
11	Siddhartha Bank Limited	2016/17-2021/22	6
12	Sanima Bank Limited	2016/17-2021/22	6
13	NIC Asia Bank Limited	2016/17-2021/22	6
14	Everest Bank Limited	2016/17-2021/22	6
15	Machhapuchchhre Bank Limited	2016/17-2021/22	6
16	Nepal SBI Bank Limited	2016/17-2021/22	6
17	Standard Chartered Bank Nepal Limited	2016/17-2021/22	6
Total number of observations			102

Thus, the study is based on 102 observations.

The model

The model used in this study assumes that profitability depends upon loan defaults. The dependent variables selected for the study are return on assets and return on equity. Similarly, the selected independent variables are bank size, capital adequacy ratio, non-performing loan, credit to deposit ratio, interest spread rate and loan loss provision. Therefore, the model takes the following form:

$$ROA = \alpha + \beta_1 ISR + \beta_2 CAR + \beta_3 NPL + \beta_4 CDR + \beta_5 BS + \beta_6 LLP + e$$

$$ROE = \alpha + \beta_1 ISR + \beta_2 CAR + \beta_3 NPL + \beta_4 CDR + \beta_5 BS + \beta_6 LLP + e$$

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 shareholder's equity, in percentage.

ISR = Interest Spread Rate as measured by the interest rate charged by banks on loans to private sector customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits, in percentage.

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

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

CDR = Credit to deposit ratio as measured by the ratio of total loans to total deposits, in percentage.

BS = Bank size as measured by the total assets of a bank, Rs in billions.

LLP = Loan loss provision as measured by the total loan loss provision of the bank, Rs in million.

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

Bank size

The size of a bank can often be assessed using various financial metrics, one of which is the paid-up capital. Paid-up capital refers to the portion of a company's authorized capital that has been issued to and paid for by shareholders. In the context of a bank, paid-up capital plays a crucial role in determining the bank's financial strength, stability, and capacity to absorb losses. Goddard et al. (2004) revealed positive impact of bank size on bank performance. Pervan and Visic (2012) found that firm size has a significant positive influence on firm profitability. A bigger bank might have a stronger market presence and better negotiating power with suppliers, customers, and partners. This can lead to favorable terms, better pricing, and potentially improved profitability. Further, Ozcan et al. (2017) found that firm size has a positive relationship with performance implying that bigger firms are expected to achieve better performance. Based on it, the study develops following hypothesis:

H_1: There is a positive relationship between bank size and bank profitability.

Capital adequacy ratio

Capital adequacy ratio is a key financial metric that measures a bank's capital adequacy and its ability to absorb potential losses. It is a crucial indicator of a bank's financial stability and risk management. The CAR is a regulatory requirement imposed by financial authorities to ensure that banks maintain a sufficient level of capital relative to their risk exposure. Berger and Bouwman (2013) found that there is a positive correlation between higher capital adequacy ratio and bank profitability. Agbeja et al. (2015) revealed that capital adequacy ratio has a positive association with bank profitability in Nigeria. Olalekan and Adeyinka (2013) examined the effect of capital adequacy on profitability of deposit- taking banks in Nigeria. The study

showed a positive and significant relationship between capital adequacy and profitability of bank. This implies that for deposit- taking banks in Nigeria, capital adequacy plays a key role in the determination of profitability. Based on it, this study develops following hypothesis:

H_2: There is a positive relationship between capital adequacy ratio and bank profitability.

Non-performing loan

Non-performing loans are loans held by financial institutions that borrowers have failed to repay according to the agreed terms, typically due to default or extended delinquency. NPLs have significant implications for both financial institutions and economies, as they erode banks' profitability, weaken their capital adequacy, and constrain lending capacity, potentially leading to credit crunches. Afolabi et al. (2020) explored a negative relationship between credit risk and profitability of Nigerian commercial banks. Collaku and Aliu (2021) examined the impact of non-performing loans on bank's profitability in Kosovo. The study showed a significant negative relationship between non-performing loan and profitability as measured by return on assets. Likewise, Patwary and Tasneem (2019) determined the effect of non-performing loan on profitability of banks in Bangladesh. The study found a negative relationship between non-performing loan and bank profitability. In addition, Kadioglu and Ocal (2017) investigated whether non-performing loans affect the bank's profitability in Turkey. The study found that non-performing loan has a negative relationship with return on asset and return on equity. Based on it, this study develops the following hypothesis:

H_3: There is a negative relationship between non-performing loans and bank profitability.

Credit to deposit ratio

Credit to deposit ratio is a crucial metric that reflects the extent to which a financial institution, typically a bank, is utilizing its deposits to extend credit to borrowers. It provides insights into a bank's lending activities and its ability to convert deposits into loans. Sari and Murni (2017) analyzed the effect of third-party fund, capital adequacy ratio, and loan to deposit ratio on bank's profitability after the application of IFRS. The study found that third party funds (TPF), capital adequacy ratio (CAR), and loan to deposit ratio (LDR) have significant positive effect on return on assets. Ajayi and Lawal (2021) examined the relationship between liquidity management and bank performance using secondary data from the published annual reports of five (5) sampled Deposit Money Banks in Nigeria for a period of ten years

(2009-2018). The proxies for liquidity management include loan to deposit ratio, loan to assets ratio, liquid ratio, while return on assets was the proxy for profitability. The study concluded that, there is a significant and positive relationship between liquidity management and profitability of banks in Nigeria. Furthermore, Rajindra et al. (2021) examined the effect of operating costs and income, loan to deposit ratio on the return on asset (ROA) of public-private foreign exchange banks listed on the Indonesia Stock Exchange (IDX) during the 2015–2018 period. The study showed that the loan to deposit ratio has a positive and insignificant effect on return on assets. Based on it, the study develops following hypothesis:

H_4: There is a positive relationship between credit to deposit ratio and bank profitability.

Interest spread rate

The interest spread rate, also known as the net interest margin (NIM), represents the difference between the interest income earned by a financial institution, primarily from lending activities, and the interest expenses it incurs on borrowed funds, such as deposits and other liabilities. In essence, the interest spread rate reflects the profitability of a bank's core lending and borrowing operations. Musah et al. (2018) examined the effect of interest rate spread on the profitability of commercial banks in Ghana. The results of the study showed that there is a positive and statistically significant association between interest rate spread and bank profitability in Ghana. Similarly, Khan and Sattar (2014) examined the effect of interest spread on profitability of four major banks in Pakistan. The results of the correlation analysis revealed a positive and statistically significant relationship between interest spread and profitability. Moreover, Owusu-Antwi et al. (2017) investigated interest rates spread and profitability of commercial banks in Ghana. Using Ordinary Least Square Regression, the results showed that bank spread affect profitability of commercial banks in Ghana positively and the relationship was statistically significant. Based on it, the study develops following hypothesis:

H_5: There is a positive relationship between interest spread rate and bank profitability.

Loan loss provision

Loan loss provisions are set aside by banks to cover potential losses from loans that may default or become non-performing. A well-managed bank is perceived to be of lower loan loss provision and such an advantage will be translated into higher profitability (Ul Mustafa et al., 2012). Ahmad et al. (2014) examined the effect of loan loss provision on the stability and

performance of banks operating in Pakistan. The results showed that loan loss provision and profitability have negative relation. Less loan loss provision provides more profitability and surely more safety and similarly more loan loss provision offers less profitability and instability of the bank. Alhadab and Alsahawneh (2016) examined the impact of loan loss provision on the profitability of Jordanian commercial banks. The result showed that loan loss provision has a negative impact on the profitability of Jordanian commercial banks. This evidence suggests that Jordan banks adjust their loan loss provision due to several motives and, this in turn, leads to negative consequences for their profitability. Based on it, the study develops following hypothesis:

$H_{6:}$ There is a negative relationship between loan loss provision and bank profitability.

3. Results and discussion

Table 2 presents the descriptive statistics of the selected dependent and independent variables during the period 2016/17 to 2021/22.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 17 Nepalese commercial banks for the study period from 2016/17 to 2021/22. ROA (Return on assets as measured by the ratio of net profit after tax to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage) are the selected dependent variables. The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted assets, in percentage), ISR (Interest spread rate as measured by the difference between deposit and credit rate, in percentage), CDR (Credit to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), BS (Bank size as measured in terms of total assets, Rs. in billions), LLP (Loan loss provision as measured by the total loan loss provision of the bank, Rs in million) and NPL (Non-performing loan ratio as measured by the ratio of non-performing loans to total loans, in percentage).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	.47	2.77	1.54	0.45
ROE	6.67	38.73	14.79	4.78
ISR	1.96	5.60	4.11	0.50
CAR	11.16	97.92	16.76	11.28
NPL	0.02	4.79	1.37	1.21
CDR	57.45	107.01	85.42	8.15
LLP	4.20	9.36	5.56	0.93
BS	4.09	6.03	5.04	0.41

Source: SPSS Software

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 coefficient matrix

This table shows the bivariate Pearson's correlation coefficients of dependent and independent variables of 17 Nepalese commercial banks for the study period from 2016/17 to 2021/22. ROA (Return on assets as measured by the ratio of net profit after tax to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage) are the selected dependent variables. The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted assets, in percentage), ISR (Interest spread rate as measured by the difference between deposit and credit rate, in percentage), CDR (Credit to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), BS (Bank size as measured in terms of total assets, Rs. in billions), LLP (Loan loss provision as measured by the total loan loss provision of the bank, Rs in million) and NPL (Non-performing loan ratio as measured by the ratio of non-performing loans to total loans, in percentage).

Variables	ISR	CAR	NPL	CDR	LLP	BS	ROA	ROE
ISR	1							
CAR	-0.020	1						
NPL	0.004	-0.220*	1					
CDR	-0.053	0.037	-0.226*	1				
LLP	0.130	0.260**	-0.573**	0.018	1			
BS	-0.108	-0.031	0.183	0.109	-0.204*	1		
ROA	0.037	0.059	-0.018	0.003	-0.037	-0.345**	1	
ROE	-0.115	-0.109	-0.113	-0.200*	-0.019	0.120	0.130	1

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

Table 3 shows that nonperforming loan has a negative relationship with return on assets. It means that increase in that nonperforming loans leads to decrease in return on assets. In contrast, there is a negative relationship between loan loss provision and return on assets. It means that increase in loan loss provision leads to decrease in return on assets. Likewise, capital adequacy ratio has a positive relationship with return on assets. It shows that higher the capital adequacy ratio, higher would be the return on assets. Moreover, there is a positive relationship between credit to deposit ratio and return on assets. It indicates that increase in credit to deposit ratio leads to increase in return on assets. In addition, interest spread rate has a positive relationship with return on assets. It indicates that increase in interest spread rate leads to increase in return on assets. Simil arly, there is a negative relationship between bank size

and return on assets. It means that larger the bank size, lower would be the return on assets.

Moreover, nonperforming loan has a negative relationship with return on equity. It means that increase in that nonperforming loans leads to decrease in return on equity. In contrast, there is a negative relationship between loan loss provision and return on equity. It means that increase in loan loss provision leads to decrease in return on equity. Likewise, capital adequacy ratio has a negative relationship with return on equity. It shows that higher the capital adequacy ratio, lower would be the return on equity. Moreover, there is a negative relationship between credit to deposit ratio and return on equity. It indicates that increase in credit to deposit ratio leads to decrease in return on equity. In addition, interest spread rate has a negative relationship with return equity assets. It indicates that increase in interest spread rate leads to decrease in return on equity. Similarly, there is a positive relationship between bank size and return on equity. It means that larger the bank size, higher would be the return on equity.

Regression analysis

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

Table 4

Estimated regression result of of bank size, interest spread rate, loan loss provision, non-performing loan, capital adequacy ratio, and credit to deposit ratio on return on equity

The results are based on 102 observations using linear regression model. The model is ROE = $\beta_0 + \beta_1$ ISR + β_2 CAR + β_3 NPL + β_4 LLP + β_5 CDR + β_6 BS + e, where ROE (Return on equity as measured by the ratio of net profit after tax to total shareholders' equity, in percentage) is the dependent variable. The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted assets, in percentage), ISR (Interest spread rate as measured by the difference between deposit and credit rate, in percentage), CDR (Credit to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), BS (Bank size as measured in terms of total assets, Rs. in billions), LLP (Loan loss provision as measured by the total loan loss provision of the bank, Rs in million) and NPL (Non-performing loan ratio as measured by the ratio of non-performing loans to total loans, in percentage).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		ISR	CAR	NPL	CDR	LLP	BS			
1	19.298 (4.907)**	-1.094 (1.154)						0.003	4.781	1.332
2	15.566 (18.229)**		-0.046 (1.092)					0.002	4.784	1.192
3	15.403 (21.393)**			-0.442 (1.131)				0.003	4.782	1.280
4	24.786 (5.021)**				-0.117 (2.034)*			0.031	4.716	4.136
5	14.247 (4.948)**					-0.098 (0.192)		0.011	4.812	0.037
6	7.907 (1.373)						1.366 (1.221)	0.004	4.778	1.439
7	27.563 (5.331)**			-0.652 (1.663)	-0.139 (0.238)			0.047	4.674	3.488
8	18.491 (4.025)**	-1.137 (1.184)					0.177 (0.344)	0.006	4.802	0.719
9	17.818 (4.572)**		-0.057 (1.303)	-0.652 (1.360)		-0.209 (0.333)		0.003	4.782	1.096
10	24.160 (4.275)**				-0.117 (2.028)*	-0.116 (0.231)		0.021	4.738	2.075

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 4 shows that the beta coefficients for loan loss provision are negative with return on equity. It indicates that loan loss provision has a negative impact on return on equity. This finding is consistent with the findings of Alhadab and Alsahawneh (2016). However, the beta coefficients for non-performing loans are negative with return on equity. It indicates that non-performing loans have a negative impact on return on equity. This finding is consistent with the findings of Kadioglu and Ocal (2017). Similarly, the beta coefficients for interest spread rate are negative with return on equity. It indicates that interest spread rate has a negative impact on return on equity. This finding contradicts with the findings of Musah et al. (2018). In contrast, the beta coefficients for credit-to-deposit ratio are negative with return on equity. It indicates that credit-to-deposit ratio has a negative impact on return on equity. This finding is consistent with the findings of Rajindra et al. (2021). In addition, the beta coefficients for bank size are positive with return on equity. It indicates that bank size has a positive impact on return on equity. This finding is consistent with the findings of Ozcan et al. (2017).

Table 5 shows the estimated regression results of bank size, interest

spread rate, loan loss provision, non-performing loan, capital adequacy ratio, and credit to deposit ratio on return on assets in Nepalese commercial banks.

Table 5

Estimated regression result of of bank size, interest spread rate, loan loss provision, non-performing loan, capital adequacy ratio, and credit to deposit ratio on return on assets

The results are based on 102 observations using linear regression model. The model is ROA = $\beta_0 + \beta_1$ ISR + β_2 CAR + β_3 NPL + β_4 LLP + β_5 CDR + β_6 BS + e, where where ROA (Return on assets as measured by the ratio of net profit after tax to total assets, in percentage) is the dependent variable. The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted assets, in percentage), ISR (Interest spread rate as measured by the difference between deposit and credit rate, in percentage), CDR (Credit to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), BS (Bank size as measured in terms of total assets, Rs. in billions), LLP (Loan loss provision as measured by the total loan loss provision of the bank, Rs in million) and NPL (Non-performing loan ratio as measured by the ratio of non-performing loans to total loans, in percentage).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		ISR	CAR	NPL	CDR	LLP	BS			
1	1.681 (4.434)**	0.034 (0.373)						0.091	0.466	0.139
2	1.501 (18.309)**		0.021 (0.588)					0.072	0.469	0.345
3	1.532 (22.124)**			-0.007 (0.181)				0.014	0.466	0.033
4	1.524 (3.154)**				0.041 (0.035)			0.104	0.468	0.001
5	1.642 (5.955)**					-0.018 (0.0372)		0.097	0.461	0.139
6	3.456 (6.621)**						-0.380 (3.681)**	0.111	0.433	13.549
7	1.638 (4.221)**	0.331 (0.361)	0.002 (0.578)					0.015	0.462	0.236
8	1.672 (4.35)**	0.034 (0.372)		-0.006 (0.174)				0.184	0.463	0.085
9	3.28 (4.892)**				0.385 (3.692)**		-0.002 (0.439)	0.103	0.435	6.816
10	3.887 (6.093)**					-0.055 (1.172)	-0.405 (3.849)**	0.114	0.432	7.487

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 5 shows that the beta coefficients for loan loss provision are

negative with return on assets. It indicates that loan loss provision has a negative impact on return on assets. This finding is consistent with the findings of Ahmad et al. (2014). However, the beta coefficients for non-performing loans are negative with return on assets. It indicates that non-performing loans have a negative impact on return on assets. This finding is consistent with the findings of Afolabi et al. (2020). 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 Khan and Sattar (2014). In contrast, the beta coefficients for credit-to-deposit ratio are positive with return on assets. It indicates that credit-to-deposit ratio has a positive impact on return on assets. This finding is consistent with the findings of Ajayi and Lawal (2021). In addition, the beta coefficients for bank size are negative with return on assets. It indicates that bank size has a negative impact on return on assets. This finding contradicts with the findings of Pervan and Visic (2012).

4. Summary and conclusion

Commercial banks, as key players in this sector, facilitate the flow of funds from savers to borrowers, thereby stimulating investment and consumption. One of the critical challenges that Nepalese commercial banks face is the issue of loan defaults, which can have far-reaching implications for their profitability and overall stability. Loan defaults occur when borrowers fail to repay their loans as per the agreed-upon terms. Such defaults not only disrupt the lender-borrower relationship but can also disrupt the banks' financial health, as the risk associated with lending can potentially erode profitability and capital adequacy. Loan default is a critical distress for commercial banks in Nepal and worldwide as it can significantly affect their profitability and overall financial stability.

This study attempts to examine the impact of loan defaults on the profitability of Nepalese commercial banks. The study is based on secondary sources of data from 17 commercial banks for the period of 2016/17 to 2021/22.

The study showed that interest spread rate, capital adequacy ratio, and credit to deposit ratio have positive effect on return on assets. However, bank size, loan loss provision and non-performing loan, have negative effect on return on equity. Similarly, interest spread rate, loan loss provision, non-performing loan, capital adequacy ratio, and credit to deposit ratio have negative effect on return on equity. The study concluded that when loans

become non-performing, banks often need to increase these provisions to cover potential losses from defaults. The higher the provisions, the lower the net income, which, in turn, lowers ROA. To cover potential loan losses and maintain regulatory capital adequacy ratios, banks might need to allocate more of their capital to cover non-performing loans. This can reduce the return on equity (ROE). Similarly, the study also concluded that managing non-performing loans often requires additional resources, including legal and collection expenses which will reduce the net profit.

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