



## Factors Determining Profitability of Commercial Banks: Evidence from Nepali Banking Sector

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### ABSTRACT

This article aims to observe the various aspects shaping commercial bank profitability in Nepal. As determining factors, bank related and external macroeconomic variables that influence bank profitability were taken into account. A set of balanced panel data containing 13 Nepali commercial banks for 12-year period (2009-2020) with 156 observations was employed for analysis. Descriptive statistics and Pearson's correlation analysis were employed to measure the status and explore the relationship between independent and dependent variables under study. The study findings were drawn using fixed-effect panel regressions. The study revealed that loan to deposit, known as credit-deposit ratio, has a significant positive impact on the return on assets and net interest margin of commercial banks. The growth of economic activities of the nation measured by gross domestic product growth, significantly influence profits. It implies that the increase in the nation's economic activities leads to escalate the size of loans and advances and eventually earnings of the banks. However, non-performing assets weakly influence the return on assets, but it has a significant negative effect on the equity return. These outcomes proposed that commercial bank profitability can be increased by extending the degree of loan and advance relative to deposit and economic activities of the nation, and decreasing non-performing assets.

**KEYWORDS:** Loan to deposit, non-performing assets, return on equity, return on assets, gross domestic product

### INTRODUCTION

The banking institutions are liable for competently channeling local savings, allowing funding for investments, dealing with a payment system and expediting management of working capital (Gaur & Mohapatra, 2020). In other words, they are financial intermediary that undertake a vital role of mobilizing funds to form capital, thereby an expansion of production volume, and trade in national and international markets, thus, enhancing opportunities for employment and hastening economic

acceleration (Levine, 1997; Rajan & Zingales, 1998). In contrast, inefficiencies in banking can also result in systemic crisis. Athanasoglou et al. (2008) argued that economies having strong and lucrative banking institutions can withstand undesirable shocks backing stability in the economic system. Commercial banks, as one of the vital groups of banking area, are considered to be the primary source of short-run financing for most businesses (Pradhan, 2016). It is apparent that a strong and sustained banking system helps in the growth and development of business activities in any economy. Therefore, understanding commercial bank profitability and identifying its determinants is a crucial phenomenon.

The liberalization policy adopted from the beginning of the 1990s, many private and joint venture commercial banks have been established in Nepal. As a result, the number of commercial banks extended up to 32 (NRB, 2013) with their multiple branches throughout the country especially in urban areas. In the later period, which started from 2011, the government of Nepal adopted a merger and acquisition policy of banks and financial institutions for enhancing their capital base, fostering efficiency, strengthening competitive capability and more importantly for sustainability of banking system on the whole. Consequently, as of now, the number commercial banks reduced to 27 including three public sector banks, 17 private banks and seven joint venture banks in Nepal. This indicates that the current structure of commercial banks has evolved over several decades that have been serving banking needs of the nation. However, it is apparent that Nepali banking sector has experienced various political hurdles and uncertainties, repeated change in policies, severe prudential norms, increasing competition, high degree of non-performing assets, increasing pressure on interest, liquidity and credit risk, upgrading technology, and rising demand on profitability. Based on this backdrop, it becomes an acute concern of digging out the real picture of banking profitability and the factors influencing it in the context of Nepali commercial banks. Hence, this study is an attempt towards exploring the factors that determine profitability of commercial banks.

This study has been organized in the following manner: the section two explains the review of literature; the data, sample observations and methodology are described in the section three. The section four offers the empirical findings and discussion and draws the conclusions at the end.

### REVIEW OF LITERATURE

Several past studies have observed the bank profitability and the associated impacting forces either of a country or cross-country perspective. The majority of the studies divide the factors determining the profitability of banks into two broad areas viz. inside and outside factors (Husni, 2011). Generally, bank related variables, both financial and non-financial, are inside or internal factors (Pradhan, 2016) while the outside or external factors, which are widely discussed, are concentration, competition, market share, deficiency of capital, regulation, ownership, inflation, money supply and size of the economy (Haron, 2004). A premier work on the profitability of banking sector was provided by Bourke (1989) and reported that the capital adequacy and profitability has positive relations. It reveals that the larger the capital adequacy, the greater is the profitability of banks. Molyneux and Seth (1998) reported that the large size banks were more profitable than smaller-sized. Kosmidou and Pasiouras (2007) observed the determinants of bank performance in Greek and documented that a highly-capitalized and lower cost to income banks earn a high return on assets during 1990 to 2002. A study by Heffernan and Fu (2008), during 1999 to 2006, suggested that the net interest margin and economic value-added do better measure the performance of banks than the

conservative measures of profitability in case of Chinese banks. Saunders and Schumacher (2006) found that the regulations and macroeconomic volatility have a significant impact on the net interest margin in the European Union and the United States over the period of 1998 to 2005.

Alper and Anbar (2011) documented that the assets size and non-interest income to assets ratio has a significant positive effect on return on assets and return on equity. However, the bank profitability and non-performing loans were negatively correlated. Concerning the external factors, only the real rate of interest has a significant positive effect on the bank profitability, measured by return on equity. Gnawali (2018) undertook a study taking 104 observations for the period of 2010 to 2017 and found a negative effect of the non-performing loans to return on assets in the context of Nepali public banks. Moreover, capital adequacy ratio, loan to deposit ratio and loan loss provision have a positive relationship with the profitability of banks in Nepal. There is a negative significant effect of liquidity on profitability (Kunt & Detragiache, 2001). Osamwonyi and Michael (2014) reported that the higher the risk accompanying with the macroeconomic factors like rate of interest and rate of inflation, the lower the return on the bank profitability. Alexiou and Sofoklis (2009) found the consumer price inflation and economic growth is positively related to the bank profitability.

An empirical work undertaken by Husni (2011) documented a significant positive effect of loan to deposit ratio in return on assets. Khati (2020) found the credit-deposit ratio has a positive insignificant relationship with bank profitability. Ramlall (2009) documented that commercial bank profitability is positively affected by operating efficiency while negative with the credit risk. However, Singh (2016) found that non-performing assets negatively influence capital adequacy ratio and banks profitability. Bagga (2017) found that the non-performing assets have a negative impact on bank profitability and are significant at 1 per cent level in India. Nachimuthu and Veni (2018) found a negative and significant influence of non-performing assets on the profitability of banks in Indian banks. Similarly, Tabir et al. (2014) documented that the loan loss provision and profitability have a negative relation and are significant at 1 per cent level in Pakistan.

Regarding the capital adequacy, Datta and Mahmud (2018) found that the bank profitability is influenced by the higher capital requirements, soaring concern between banks performance, i.e. profitability and minimum capital requirements of the banks. The study of Eastern European banks, Caprau and Ihnatov (2014) showed that the bank profitability and the capital adequacy ratio were positively correlated. Athanasoglou et al. (2006) documented that the concentration and bank profitability is positively correlated and the profitability is significantly affected by the rate of inflation. On the other hand, bank profitability is not significantly affected by the gross domestic product growth during 1998 to 2002 in the South Eastern European region.

Shepherd (1972) reported the growth in size of bank causes no economies of scale while Niresh and Velnampy (2014) revealed the size of the bank has no intense effect on banks' profitability. Pravin et al. (2011) found a significant positive impact of bank size on the profitability of banks. Davydenko (2011) employed the fixed-effects technique and proved that the gross domestic product and inflation reveals a significant positive relation with the return on assets of Ukrainian banks. Saksonova and Solovjova (2011) found that the gross domestic product growth had a progressive contribution to profits and inflation adversely affects return on assets in Latvian commercial banks. A survey conducted by Shaher et al. (2011) where they distributed 320 questionnaires among bank-related individuals and responses proved a significant association of the gross domestic product with earnings. Osamwonyi and Michael (2014) found that the

gross domestic product has a significant positive impact on the profitability in Nigeria. Hanzlik and Teply (2019) found a substantial impact of the gross domestic product growth on net interest margin of banks.

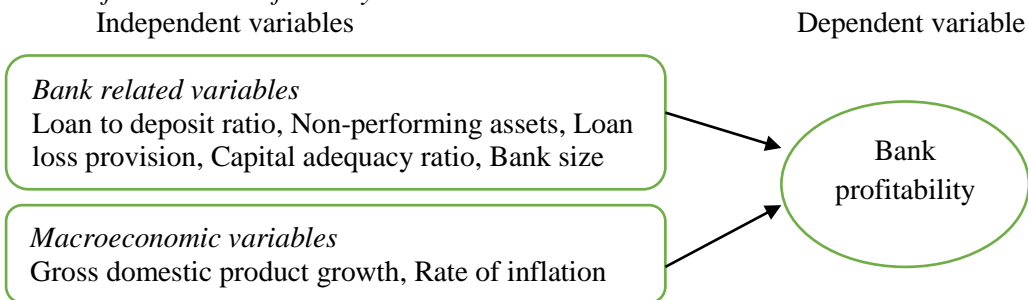
Ifeanyi and Chukwuma (2016) found that the general increase in prices results in inflation, which reflects a weak purchasing power of the nation's currency, affirms a seamless negative association between the firm value and inflation. They also found an insignificant relationship between economic value-added and inflation with that of the profitability of banks. Ishfaq and Khan (2015) and Chintia (2018) studied cost efficiency, inflation and bank profitability in Pakistan and found an insignificant negative effect of inflation on profitability. Nguku (2016) documented a statistically insignificant impact of inflation on the bank performance. It further revealed that the impact of rate of exchange on Kenyan commercial banks performance remains significantly negative. Using pooled data from 2010 to 2015 of 14 commercial banks with 77 observations, Bhattarai (2018) documented that the overall bank profitability is negatively affected by the non-performing loan ratio whereas adverse on the shareholders' return. Bank size positively affects the bank profitability viz. return on assets and equity return both. Similarly, there is a significant positive impact of the gross domestic product on return on equity. Gaur and Mohapatra (2020), employing a balanced panel data set over 2005 to 2018 of Indian 37 scheduled banks, reported a significant negative correlation between non-performing assets and the bank profitability namely return on assets and return on equity.

Pradhan (2016) reported that the mean equity return stands at 16.18 per cent whereas the mean return on assets stands at 14.42 per cent during 2006 through 2012. The mean of non-performing loan to total loans was perceived at 4.23 per cent. However, the coefficients for liquidity and credit-deposit ratio were significant statistically with that of return on assets at 5 per cent level. Using a set of balanced panel data Gwachha (2019) reported that the deposit to assets and the size of assets have a positive significant impact on the profitability of banks. But the loan portfolio has a significantly negative effect on the profitability of banks. Concerning to external variables, only the stock market capitalization and the real rate of interest affect the bank performance positively.

The empirical outcomes have shown a mixed evidence on bank related and external macroeconomic variables influencing the profitability of banks. However, this study does not recognize the role of vast majorities of bank related and external macroeconomic factors influencing the profitability. The effort simply confines to define the predictive power of loan to deposit, non-performing assets, loan loss provision, capital adequacy ratio, size of the bank, gross domestic product growth and inflation in the bank profitability viz. return on assets, return on equity and net interest margin.

**Figure 1**

*Model of the Bank Profitability*



**RESEARCH METHODOLOGY**

This study has employed descriptive cum causal research designs. Employing secondary sources of data, the study analyzed the effect of bank related and external factors on the profitability of Nepali commercial banks. The bank related and external macroeconomic data were collected from Quarterly Economic Bulletin of Nepal Rastra Bank, Financial Statistics and annual reports of selected Nepali commercial banks that covered a 12-year period (2009–2020). Hence, it creates the data set of a balanced panel comprising of 156 observations. The selected commercial banks, both domestic and joint venture, for the study are: Global IME Bank Limited, Nepal SBI Bank Limited, Sidhartha Bank Limited, Sanima Bank Limited, Himalayan Bank Limited, Everest Bank Limited, Nabil Bank Limited, NMB Bank Limited, Prime Commercial Bank Limited, Laxmi Bank Limited, Machhapuchhre Bank Limited, Kumari Bank Limited and NIC Asia Bank Limited. These are the leading and rising commercial banks having a systematic database required for the study and analysis of which may be representative for overall commercial banking system.

The study assumes that the bank profitability depends on the loan to deposit, non-performing assets, loan loss provision, capital adequacy ratio, size of the bank, the gross domestic product growth and the rate of inflation. To contemplate the heterogeneity existent in the bank and deriving a strong outcome by forming an extensive group of observations that is a model appropriate for the panel data has employed. More specifically, realistic comprehensions have drawn on the subject matter by employing the following standard model of the linear relationship (Gaur & Mohapatra, 2020):

$$\Pi_{it} = \alpha + \beta_x X_{it} + \beta_y Y_{it} + \varepsilon_{it} \dots\dots\dots (i)$$

Where  $\Pi_{it}$  refers to the commercial bank profitability  $i$  in year  $t$  with  $i = 1, 2, \dots, N$ , and  $t = 1, 2, \dots, T$ ;  $\alpha$  defines the intercept,  $\beta_x$ , and  $\beta_y$  indicates the parameters of bank related, and external macroeconomic independent variables,  $X_{it}$  represents the vector of bank related independent variables, and  $Y_{it}$  shows the vector of external macroeconomic variables employed in the study.  $\varepsilon_{it}$  represents the residuals assuming they are normally distributed with zero mean and equal variances across the period.

In light of the independent variables presented in Table 1, the standard model (i) has been amplified with these variables in equations (ii), (iii) and (iv):

$$ROA_{it} = \alpha + \beta_{x1} \ln LTD_{it} + \beta_{x2} NPA_{it} + \beta_{x3} LLP_{it} + \beta_{x4} CAR_{it} + \beta_{x5} \ln TA_{it} + \beta_{y1} GDP_{it} + \beta_{y2} INF_{it} + \varepsilon_{it} \dots\dots (ii)$$

$$ROE_{it} = \alpha + \beta_{x1} \ln LTD_{it} + \beta_{x2} NPA_{it} + \beta_{x3} LLP_{it} + \beta_{x4} CAR_{it} + \beta_{x5} \ln TA_{it} + \beta_{y1} GDP_{it} + \beta_{y2} INF_{it} + \varepsilon_{it} \dots\dots (iii)$$

$$NIM_{it} = \alpha + \beta_{x1} \ln LTD_{it} + \beta_{x2} NPA_{it} + \beta_{x3} LLP_{it} + \beta_{x4} CAR_{it} + \beta_{x5} \ln TA_{it} + \beta_{y1} GDP_{it} + \beta_{y2} INF_{it} + \varepsilon_{it} \dots\dots (iv)$$

This paper focuses in analyzing the impact of bank related and external macroeconomic variables on commercial bank profitability. For this, commercial bank profitability is used as a dependent variable and bank related and external macroeconomic variables are considered as independent variables. The operational definitions of these variables mainly of their proxies are given in Table 1.

**Table 1**  
*List of the Variables with their Definitions*

<b>Dependent variable</b>	<b>Measurement</b>	<b>Definition</b>
Return on assets	Net income / Total assets	ROA measure a bank's overall profitability. It is an indicator of how a bank generates profit by

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(ROA)			utilizing the assets available.
Return on equity (ROE)	Earnings available to equity holders / Shareholders equity		ROE indicates a bank's financial performance. It shows the degree to which a bank is successful to mobilize its equity.
Net interest margin (NIM)	(Interest income – interest expense) / Average interest earning assets		NIM shows the net interest-earning relative to average interest-earning assets employed in the bank. The higher the net interest margin, the greater the profitability of banks and the steadier the growth of bank is.

Independent variable	Measurement	Definition	Expected sign
<i>Bank related variables</i>			
Loan to deposit (LnLTD)	Natural logarithm (Loan and advance / Total deposits)	LTD is also known as credit-deposit (CD) ratio. It shows how much deposit is provided as loans and advances. As loans and advances are the primary sources of income for banks, a higher LTD ratio implies the better utilization of deposits and better earnings. As this ratio seems higher variability over the period, natural logarithm of loan and advance to total deposits has been considered.	(+)
Non-performing assets (NPA)	Non-performing loan / Total loan and advance	It implies assets quality of the bank. It represents the percentage of loans which has stopped initiating any interest/principal income for 90 days or more. So lower NPA is preferable.	(-)
Loan loss provision (LLP)	Loan loss provision / Loan and advance	It reflects the increased probability of a non-performing loan. An increase in loan loss provision indicates poor asset quality that decreases profit and dividends.	(-)
Capital adequacy ratio (CAR)	Total capital fund / Risk weighted assets	CAR refers to the ratio of a bank's available capital fund and risk-weighted credit exposures. Adequate capital (Basel Accord) protects depositors, and promotes the steadiness and efficiency of the fiscal system. A bank with a greater capital adequacy ratio is reflected safe and strong enough to encounter its financial commitments.	(+)
Bank size (lnTA)	Natural logarithm (Total assets)	It represents the size of assets held by a bank. When bank size is bigger, it indicates the strength of banks.	(+)

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<i>Macroeconomic variables</i>		
Gross domestic product (GDP)	Gross Domestic Product growth rate	It measures the size of an economy, and thus, determines the total demand for credit. Gross domestic product growth is one of the primary indicators of economic growth. (+)
Inflation (INF)	Rate of inflation	It reflects the buying power of the currency is deteriorating. A high inflation rate indicates a negative sign for economic growth and vice versa. (-)

### RESULTS AND DISCUSSION

This section gives the outcomes of the study with a discussion for observing the effect of bank related and external macroeconomic variables on the profitability of commercial banks.

#### Descriptive Summary

Table 2 provides the initial summary statistics of the selected dependent, and independent variables during the period from 2009 to 2020.

**Table 2**  
*Descriptive Statistics of the Variables*

Variable	Mean	Std. Dev.	Min.	Max.
ROA	1.505	0.598	0.020	4.430
ROE	15.918	6.406	0.500	42.220
NIM	3.759	0.741	1.360	5.610
lnLTD	4.390	0.114	3.903	4.618
NPA	1.153	0.929	0.000	4.220
LLP	1.842	0.857	0.010	4.550
CAR	12.773	2.228	10.040	28.410
lnTA	3.989	0.802	1.766	5.613
GDP	4.483	1.905	0.600	7.500
INF	7.638	2.331	3.630	11.090

Table 2 reveals that the mean return on assets has been retained at 1.51 per cent for the banks under considerations during the study period. The mean return on equity is maintained at 15.92 per cent for the same period and the maximum return on equity has been recorded at 42.22 per cent. However, the standard deviation of return on equity is greater than that of return on assets of sample banks.

The mean non-performing assets in the industry remain at 1.15 per cent over the period under study. The capital adequacy ratio ranges widely, indicating commercial banks that vary highly in their ability to meet likely financial obligations. Inflation in the economy remains as unexpected at 11.09 per cent, leading to a mean of 7.64 per cent, indicating a weak purchasing power of currency and poor economic growth in the nation.

#### Relationship between Variables

Bivariate correlation coefficients showing the degree of the relationship between the dependent and independent variables are presented in Table 3.

**Table 3**  
*Correlation Coefficients between the Dependent and Independent Variables*

Variable	ROA	ROE	NIM	lnLTD	NPA	LLP	CAR	lnTA	GDP	INF
ROA	1									
ROE	.753**	1								
NIM	.567**	.407**	1							
lnLTD	0.053	-.266**	.176*	1						
NPA	-.162*	-0.155	0.097	-0.135	1					
LLP	-.173*	-0.034	0.075	-.251**	.842**	1				
CAR	-.180*	-.352**	-0.041	.247**	-.280**	-.262**	1			
lnTA	.285**	.257**	.309**	0.029	-0.079	-0.155	-0.128	1		
GDP	0.115	-0.045	0.119	0.132	-0.123	-.188*	0.100	0.110	1	
INF	-0.102	0.084	-.187*	-.312**	.193*	.325**	-.194*	-.760**	-.472**	1

*Note.* \*\* Significant at 1 per cent level.

\* Significant at 5 per cent level.

Table 3 shows that the non-performing assets are negatively and significantly correlated to return on assets at 5 per cent level. It suggests that the rise in the non-performing assets leads to a fall in the return on assets. Similarly, the ratio of capital adequacy and the loan loss provision have a significant negative relation with the overall bank profitability. Loan to deposit ratio has a significant negative relation with the return on equity of banks while the size has a positive significant association with banking profitability.

The independent variables like non-performing assets and loan loss provision are strongly correlated with each other indicating multicollinearity between them. Gujarati (1995) and Kennedy (2003) state that the high correlations over 0.80 are an ample but not an essential condition for the presence of multicollinearity. The problem of multicollinearity in the model specifications employed in the study have checked using variance inflationary factor (VIF).

### Model Diagnostic

Table 4 reveals the results of checking diagnostic for the model fitness in the study. Since the *p*-value of error terms or residuals for the model specifications (ii) and (iii) using Breusch-Pagan test is less than 5 per cent, the problem of heteroskedasticity exists while the model specification (iv) has no such problem in the error terms. To solve problem of heteroskedasticity, the outcomes of standard errors have described in Table 5. The outcomes of the run test support the null hypothesis implying that there is a serial correlation in residuals of the fixed-effect model.

**Table 4**  
*Diagnostic Check and the Model Selection*

	ROA		ROE		NIM	
Breusch-Pagan test (heteroskedasticity)	$\chi^2(7) = 20.33$	Prob> $\chi^2 = 0.0049$	$\chi^2(7) = 24.22$	Prob> $\chi^2 = 0.0010$	$\chi^2(7) = 13.45$	Prob> $\chi^2 = 0.0618$
Run test (serial correlation)	$z(47,156) = -5.14$	Prob> $z = 0.0000$	$z(56,156) = -3.69$	Prob> $z = 0.0000$	$z(50,156) = -4.66$	Prob> $z = 0.0000$
Hausman test (fixed /random-effect)	$\chi^2(7) = 27.60$	Prob> $\chi^2 = 0.0003$	$\chi^2(7) = 25.78$	Prob> $\chi^2 = 0.0006$	$\chi^2(7) = 43.14$	Prob> $\chi^2 = 0.0000$
Model accepted	Fixed-effect		Fixed-effect		Fixed-effect	

In order to select whether to use a fixed-effect model or a random effect model, Hausman Test was employed. Since the *p*-value of the Hausman test is less than 5 per



cent in all the cases implying a fixed-effect model is appropriate to observe the impact of the bank related and external macroeconomic variables on the profitability of commercial banks. The presence of multicollinearity has been observed employing a variance inflationary factor. Table 5 reported the variance inflationary factor for the independent variables, which is calculated as less than 10, implying that there is no presence of multicollinearity among variables.

**Influence of Bank Related and Macroeconomic Variables on Bank Profitability**

As explained earlier, the outcomes of all the panel regressions have derived, employing a fixed-effect model. The panel regression of the bank profitability and associated variables under study has offered in Table 5. More precisely, the table presents the panel regression results of loan to deposit, non-performing assets, loan loss provision, capital adequacy ratio, size of the bank, gross domestic product growth and rate of inflation on return on assets, return on equity, and net interest margin.

**Table 5**  
*Panel Regression Results*

	(a) ROA		(b) ROE		(c) NIM		VIF
	Coefficient (t-value)	Standard error	Coefficient (t-value)	Standard error	Coefficient (t-value)	Standard Error	
lnLTD	1.5450 (3.45)*	0.4473	-1.0731 (-0.23)	4.7135	2.6552 (4.19)*	0.6332	1.334
NPA	-0.0609 (0.74)	0.0825	-3.062 (-3.52)*	0.8697	0.1685 (1.44)	0.1168	3.694
LLP	-0.0199 (0.23)	0.0867	2.071 (2.27)**	0.9139	0.0887 (0.72)	0.1228	3.964
CAR	-0.0334 (1.65)	0.0203	-0.7314 (-3.43)*	0.2135	0.0119 (0.41)	0.0287	1.423
lnTA	0.1064 (1.02)	0.1048	2.8985 (2.62)**	1.1042	0.2331 (1.57)	0.1483	4.263
GDP	0.0420 (1.74)***	0.0242	0.3573 (1.40)	0.2546	0.0547 (1.60)	0.0342	1.727
INF	0.0424 (1.09)	0.0389	0.9626 (2.35)**	0.4103	0.0418 (0.76)	0.0551	5.975
Constant	-5.6815 (2.58)**	2.1979	9.1691 (0.40)	23.1631	-9.9031 (-3.18)***	3.1117	-
Sigma_u	0.4381		3.4212		0.4585		-
Sigma_e	0.4099		4.3201		0.5804		-
Rho ( $\rho$ )	0.5332		0.3854		0.3843		-
R <sup>2</sup>	0.2430		0.3910		0.2220		-
Model fit	F(7,136)=3.59	Prob>F=0.0014	F(7,136)=6.77	Prob>F=0.0000	F(7,136)=5.26	Prob>F=0.0000	

*Note.* \* Significant at 1 per cent level.  
 \*\* Significant at 5 per cent level.  
 \*\*\* Significant at 10 per cent level.

The results derived for Equation (ii) are presented in part (a) of Table 5. *F*-statistic measures the statistical significance of the joint predictive power of variables in the model. The model has a *p*-value less than the standard significance level, indicating the overall model specification is appropriate. The overall significance of the model as shown in Table 5 is found significant at 1 per cent. *R*<sup>2</sup> reflects the predictive command of the model proposed, which is 0.243 or 24.3 per cent, in profits of the banks viz. return on assets. The Rho ( $\rho$ ) value is moderate i.e. 0.533, which reveals that the residuals describe reasonable variation in the dependent variable. Hence, it implies that the performance of the model specification is pretty above average.

In regard to the effect of individual independent variables, only loan to deposit and gross domestic product growth have a significant effect on the overall bank profitability. Loan to deposit ratio, also known as the credit-deposit ratio, has a significant positive effect on the profitability of banks at 1 per cent level. It can be inferred that the loan to deposit, which measures utilization of deposits for earning interests, is a vital source of increasing profits of commercial banks. The results align with the conclusion of Husni (2011) drawn for the Jordanian banking institutions. A similar study by Pradhan (2016) and Gnawali (2018) documented only a positive relation of loan to deposit to return on assets for the commercial banks of Nepal. Likewise, there is a statistically significant positive effect of gross domestic product growth on the profitability of banks. It implies that if there is a high total demand for credit, then it will give the high overall return to the banks in the period of the economic boom. The result is similar with findings by Davydenko (2011) for Ukrainian banks, and Osamwonyi and Micheal (2014) for the banking institutions of Nigeria.

Referring to other independent variables, the impact of non-performing assets is not sizeable. It is comprehended that the profitability of Nepali commercial banks is not significantly subjected by the non-performing assets. However, the impact is negative as expected for the return on assets. This outcome is in line with the results of Singh (2016), Begga (2017), and Machimuthu and Veni (2018) for Indian banks. The variable loan loss provision, which shows a provision made for security against various non-performing assets that lower profits, stands a negative sign as expected but remain a low coefficient. It implies that the higher the loan loss provision, the return on assets of the banks will remain lower. The outcome is in line with the findings of Ahmed and Ariff (2014), i.e. negative and the most significant for Pakistanian banks. Still it contradicts with the conclusion of Gnawali (2018) of Nepali private and public banks.

The negative coefficient of capital adequacy ratio provides threats against unanticipated losses since banks with the high capital base, as suggested by the Basel Accord, are expected to protect depositors and provide more stable and better performance concerning return on assets. Gaur and Mohapatra (2020) argued that a bank with high capitalization is obviously anticipated to entail less outside financing and, hence, bears less affliction of fixed interest expenses from its profits. Likewise, there is a positive relationship between the size of bank and return on assets, but not significant. It represents that Nepali banks are in the offing to gain from minimizing costs in scale, and it is able to earn increased return as expected in comparison to smaller-sized banks. A study by Gnawali (2018) reported a positive significant impact of size on profits of private commercial banks in Nepal. Finally, inflation has a progressive effect on the profits of commercial banks, which is similar with the results of Alexion and Sofoklis (2009) and Davydenko (2011) of Ukrainian banks. But the results contradict with the conclusion of Saksonova and Solovjova (2011). However, the outcomes of the current study contradict the established economic theories.

The panel regression results of Equation (iii) for return on equity of bank are shown in part (b) of Table 5. Since the  $p$ -value of the model is less than the significance level, indicating that the overall model specification is appropriate. The overall significance of the model as shown in Table 5 is found significant at 1 per cent. The independent variables explained only 22.2 per cent variations in return on equity as shown by  $R^2$ . However, the overall model is fitted significantly at 1 per cent level and the error term explains variations at a lower degree in the dependent variable. It reflects the model is fairly good.

The non-performing assets have a significant negative influence on the equity returns of the banks. Higher non-performing assets signify the weaker credit quality,

which reduces wealth of equity shareholders' in banking sector. Additional independent variables like the size of banking assets seem to be positive and significantly affect the return on equity while it is negatively influenced by the capital adequacy. The capital adequacy negatively influences the return on equity. Thus, it is inferred that an increase in the proportion of equity leads to reduce the return to equity shareholders. The variables loan loss provision and rate of inflation have a significant positive effect on the bank equity returns. Similarly, the gross domestic product does seem to positively influence return on equity. Opposing the expected association, the loan to deposit is shown to have an adverse effect on equity returns of shareholders in the commercial banks.

The panel regression results of Equation (iv) for the net interest margin of banks are shown in part (c) of Table 5. The overall significance of the model as shown in Table 5 is found significant at 1 per cent. The model has weakly explained variations in the net interest margin as shown by  $R^2$ . The error term explains variations at the lower degree in the dependent variable. It reflects that the suitability of the model employed is relatively good. Regarding the impact of independent variables, only the loan to deposit has a significant effect on the net interest margin at 1 per cent level. It is inferred that the loan to deposit, which measures the utilization of deposits is highly influential in the interest earnings of banks. To a great extent, the results confirm the results drawn earlier for the return on assets model. All other independent variables, as indicated in the model, seem to have a positive influence in the net interest margin of Nepali commercial banks.

### CONCLUSION

This article observes the impact of bank related and external macroeconomic variables on the profitability of commercial banks in Nepal. Return on assets, return on equity and net interest margin are the proxies of bank profitability. It also examines the various bank related and macroeconomic factors, impacting the profitability of banks. The aggregate profitability of banks during the last 12 years remain moderate while return on equity keeps highly fluctuating. Other things remaining the same, fluctuation in the return on equity signifies the bank is unable to mobilize its equity efficiently. This could be attributed to the challenges witnessed by the banks in attracting investments during the period under study.

The mobilization of credits, measured by the loan to deposits, is found to be satisfactory since there are lower variations in its performance. The overall profitability and interest earnings are highly contributed by the loan and advance of the commercial banks over the period under study. It means that loan and advance are one of the major sources of income of commercial banks in Nepal. The positive non-performing assets lead to reduce the profitability of banks, implying the quality of credits that are deteriorating. More specifically, the results show that the non-performing assets are highly influential in reducing shareholders' wealth. Further, the capital adequacy weakly contributed to profitability of commercial banks, implying the banks that are unable to utilize available capital productively even if they maintain the minimum requirements of capital adequacy as prescribed by Nepal Rastra Bank. However, the size of the assets has grown positively, which shows that the commercial banks have been expanding their business. It helps the growth of banks. The banks are likely to achieve a gain from combined energy and economies of scale. The increasing size of assets could be attributed to the strength, which is due to the regulatory provision imposed to increase paid-up capital of banking institutions in Nepal. Finally, the external macroeconomic variable like the growth of gross domestic product has a progressive impact on the profitability of commercial banks. Thus, it is inferred that there is a high total demand for

credit, then it will give a high overall return to the commercial banks during the economic boom period.

This study is limited to the banks of only 13 private and joint venture ownership operating in Nepal. More comprehensive results can be derived by undertaking a large set of variables related to the bank and other external macroeconomic variables and their relationship with the profitability of banks. An inclusive study by undertaking banks of the public sector of Nepal as well as cross-country analysis of banks of foreign origin has not been included in the study. Thus, there is an ample scope for future studies by increasing the number of bank related and macroeconomic variables and extending the size of the sample for a more varied group of banks.

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