Impact of Financial Leverage, Growth and Size on the Profitability of Nepalese Commercial Banks

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Abstract

This study examines the effect of financial leverage, growth, and size on the profitability of Nepalese commercial banks. Return on asset and net interest margin are selected as the dependent variables. Similarly, asset growth, board size, debt to equity ratio, firm size, leverage, and number of branches are selected as the independent variables. This study is based on secondary data of 15 commercial banks with 120 observations for the study period from 2014/15 to 2021/22. The data were collected from Banking and Financial Statistics published by Nepal Rastra Bank, annual reports of the selected commercial banks and reports published by Ministry of Finance. The correlation coefficients and regression models are estimated to test the significance and importance of financial leverage, growth, and size on the profitability of Nepalese commercial banks.

The study showed that asset growth has a negative impact on return on assets and net interest margin. It indicates that increase in asset growth leads to decrease in return on assets and net interest margin. In addition, number of branches has a negative impact on net interest margin. It means that increase in number of branches leads to decrease in net interest margin. Likewise, board size has a positive impact on return on assets. It indicates that increase in board size leads to increase in return on assets. Moreover, leverage ratio has a negative impact on return on assets. It indicates that increase in leverage ratio leads to decrease in return in assets of Nepalese commercial banks. Similarly, number of branches have a positive impact on net interest margin. It indicates that increase in number of branches leads to increase in net interest margin. In addition, firm size has a negative relationship with return on assets and return on equity. It means that increase in firm size leads to decrease in return on assets and return on equity.

Keywords: return on asset, net interest margin, asset growth, board size, debt to equity, firm size, leverage, number of branches

1. Introduction

A strong and profitable banking system promotes broader financial stability and increases the economy's resilience to adverse macroeconomic shocks (Tafri *et al.*, 2009). Banks largely depends on competitive marketing strategy that determines their success and growth (Yin *et al.*, 2020). The modalities of the banking business have changed a lot in the new millennium compared to the way they used to be in the years bygone. Banks can hardly survive without a positive return on capital invested. Profitability is therefore the driven factor for activities of commercial banks. Consequently, banks engage in a variety of products and services for the achievement of this profit or

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to be profitable. Similarly, banking sector plays a significant role in sustaining financial markets and has a significant impact on the success of the economy (Sangmi and Nazir, 2010). The financial sector is one of the key components of economic development. A strong financial system promotes investment and allocates resources efficiently. A well evolved and developed bank industry provides a long-term fund for economic development (Agiobenebo and Ezirim, 2002). Commercial banks are established to improve the public economic welfare by offering banking services, to mobilize the deposit amount into a different loan to the individual, private, and public sectors. Thus, commercial banks have been playing a vital role in the growth of the nation directly or indirectly. The stability of commercial banks depends on better financial performance. Better financial performance level has tendency to absorb risks and shocks that commercial banks can face (Ally, 2013).

Mennawi (2020) examined the impact of liquidity, credit, and financial leverage risks on financial performance of Sudanese banking sector. The study showed that the credit risk and financial leverage have significant and negative impact on the financial performance of Islamic banks in Sudan. Karugu *et al.* (2021) assessed the interest rate, financial leverage, and financial performance of microfinance companies in Kenya. The study concluded that the interest rates and financial leverage have a positive effect on the financial performance of microfinance institutions. Furthermore, Ndubuisi *et al.* (2019) examined the effect of financial leverage on profit growth of quoted non-financial firms in Nigeria. The study concluded that financial leverage has significant effect on the profit growth of firms in Nigeria. The study also revealed that there exists a significant relationship between the inflation rate and profit growth but the relationship with the interest and exchange rates on financial leverage of quoted companies in Nigeria. In contrast, Esra (2020) revealed that asset growth has a negative and significant effect on return on assets. The study also found that the debt-to-equity ratio has insignificant effect on dividend payout ratio. Moreover, Missy *et al.* (2016) analyzed the influence of capital structure, size, and growth on profitability and corporate value. The study showed that company growth has significant effect on the profitability. Anafo *et al.* (2015) investigated the impact of capital structure on profitability of banks listed on the Ghana Stock Exchange. The study showed that the asset growth rate has a negative and insignificant relationship with profitability. Abata (2014) revealed that asset quality has a statistically significant influence on bank performance. Likewise, Yadev and Salim (2012) showed that there is positive relationship between the asset growth and profitability.

Randika (2022) assessed the effect of financial leverage on firm

performance: Reference to investment trust companies listed in Sri Lanka. The study concluded that there was no significant relationship between financial leverage and profitability. Abate and Mesfin (2019) analyzed the factors affecting profitability of commercial banks in Ethiopia. The study showed that the leverage has statistically significant and positive relationship with banks' profitability. Rauniyar *et al.* (2016) investigated the impact of corporate governance in controlling fraud in the context of Nepalese commercial banks. The study revealed a significant impact of leverage on the performance. AlGhusin (2015) examined impact of financial leverage, growth, and size on profitability of Jordanian industrial listed companies. The study showed that there is a significant effect of the financial leverage on profitability of industrial companies. Likewise, Sheikh and Karim (2015) concluded that the leverage is positively related to performance of commercial banks. Doyran (2013) concluded that the leverage important forces behind the net interest margins (NIM) and profits (ROA) in the Argentinian banking industry. Musau (2022) revealed that the number of branches has a positive association with the profitability of commercial bank. Widiyasumarlin and Riadi (2022) concluded that the number of branches have a positive effect on profitability. Farooq *et al.* (2021) revealed that the number of branches have a significant positive impact on net interest margin. Hossain and Saif (2019) revealed that the firm size (total assets, number of employees and number of branches) is positively associated with firms' profitability. The study also concluded that the other firm specific factors such as age and independent director on board have negative influence on firms' profitability operating in Bangladesh banking industry.

Ashraf *et al.* (2017) concluded that bank specific and macroeconomic determinants strongly influence the bank's profitability. The study also concluded that the larger asset size of banks may lead to increase in bank's profitability. Kawshala and Panditharathna (2017) found that the size is significant bank specific determinants of bank profitability in Sri Lanka. The study also showed that there is a positive relationship between those factors and bank profitability. Moreover, Silva and Hewage (2022) concluded that the board size has a significantly negative relationship with firm performance measured by return on assets (ROA). Ayuningrum (2021) concluded that the board size has insignificant and positive effect on the profitability of bank. Rehman and Muhammad (2020) concluded that the board size has a positive association with ROA. In addition, Belkhir (2009) concluded that there is a positive relationship between board size and performance as measured by return on assets. Alzubi and Bani-Hani (2021) concluded that there is a

significant negative relationship between debt-to-equity and performance. Khan *et al.* (2016) indicated a significant but negative relationship of short-term debt, long term debt and total debt with return on assets. In addition, the study also revealed a significant but negative relationship between debt ratio and profitability. Taani (2013) concluded that bank performance, which is measured by net profit, return on capital employed, and net interest margin is significantly and positively associated with total debt. The study also found that the total debt is insignificant in determining return on equity in the banking industry of Jordan. Additionally, Velnampy and Nimalathasan (2010) concluded that there is a positive relationship between debt ratio and return on assets. Abbas et al. (2021) revealed that bank size has significant impact on the commercial banks' performance. Likewise, Almaqtari *et al.* (2019) revealed that bank size significantly affects the profitability of Indian commercial banks as measured by ROA. Further, Kassem and Sakr (2018) revealed that the bank size is the main determinants of bank's profitability.

In the context of Nepal, Oli (2021) stated that the financial leverage has a positive relationship with return on assets and net profit margin. However, the board size has a negative relationship with return on assets. Similarly, Budhathoki *et al.* (2020) revealed that the higher bank size appeared favorable to the Nepalese commercial banks and was found to have positive effects on all three profitability measures: ROA, ROE, and NIM. On the contrary, Tharu and Shrestha (2019) argued that the profitability (ROA) has not been significantly influenced by size of the bank (Assets). Rajbahak *et al.* (2017) found that board size, firm size, and firm growth have positive and significant impact on return on assets but insignificant impact on return on equity. The study also found that the foreign ownership, debt to equity ratio, and firm growth have insignificant impact on return on asset.

The above discussion shows that empirical evidences vary greatly across the studies concerning the effect of asset growth, board size, debt to equity, firm size, leverage, and number of branches on bank 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 this study is to examine the effect of asset growth, board size, debt to equity, firm size, leverage, and number of branches on the profitability of Nepalese commercial banks. Specifically, it examines the relationship of asset growth, board size, debt to equity, firm size, leverage, and number of branches with 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 sections draws the conclusion.

2. Methodological aspects

The study is based on secondary data which were gathered from 15 commercial banks from 2014/15 to 2021/22, leading to a total of 120 observations. The study has used purposive sampling method to select the banks. 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 banks selected for the study along with the study period and number of observations

S. N.	Name of the banks	Study period	Observations
Public Banks			
1	Agricultural Development Bank Limited	2014/15-2021/22	8
2	Nepal Bank Limited	2014/15-2021/22	8
3	Rastriya Banijya Bank Limited	2014/15-2021/22	8
Joint Venture Banks			
4	Everest Bank Limited	2014/15-2021/22	8
5	NMB Bank Limited	2014/15-2021/22	8
Private Banks			
6	Citizens Bank International Limited	2014/15-2021/22	8
7	Laxmi Bank Limited	2014/15-2021/22	8
8	Machhapuchchhre Bank Limited	2014/15-2021/22	8
9	Nepal SBI Bank Limited	2014/15-2021/22	8
10	NIC Asia Bank Limited	2014/15-2021/22	8
11	Prime Commercial Bank Limited	2014/15-2021/22	8
12	Sanima Bank Limited	2014/15-2021/22	8
13	Siddhartha Bank Limited	2014/15-2021/22	8
14	Standard Chartered Bank Nepal Limited	2014/15-2021/22	8
15	Sunrise Bank Limited	2014/15-2021/22	8
Total number of observations			**120**

Thus, the study is based on the 120 observations.

The model

The model used in this study assumes that the profitability of Nepalese commercial banks depends upon the asset growth, board size, debt to equity, firm size, leverage, and number of branches. The dependent variables selected for the study are return on asset and net interest margin. Similarly, the selected independent variables are asset growth, board size, debt to equity, firm size, leverage, and number of branches. Therefore, the model takes the following form:

Bank's profitability = f (AG, BS, DE, FS, LEV and NOB)

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

$$ROA = \beta_0 + \beta_1 AG + \beta_2 BS + \beta_3 DE + \beta_4 FS + \beta_5 LEV + \beta_6 NOB + e_{it}$$

$$NIM = \beta_0 + \beta_1 AG + \beta_2 BS + \beta_3 DE + \beta_4 FS + \beta_5 LEV + \beta_6 NOB + e_{it}$$

Where,

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

NIM = Net interest margin as measured by the ratio of net interest revenue to total asset, in percent.

AG = Asset growth as measured by difference in current year total asset and previous year total to previous year total asset, in percent.

BS = Board size as measured by total number directors on the board, in percent.

DE = Debt to equity ratio as measured by total debt to total equity-to-deposit, in percent.

FS = Firm size as measured by total assets, Rs. in billion.

LEV = Leverage is measure as the degree to which a firm's capital structure comprises more of total debt as against equity, in percent.

NOB = Number of branches of the listed banks, in numbers.

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

Asset growth

Markonah and Prasetyo (2022) claimed that assets growth and financial performance of bank are positively and significantly related. Similarly, Gaio and Henriques (2018) found a positive relationship between asset growth and banks' profitability. In addition, Dahmash (2015) revealed a positive association between asset growth and return on assets (ROA). Likewise, Dogan (2013) found a positive association between asset growth and profitability of bank. Similarly, Bayyurt (2007) found that asset growth is positively associated with banks' profitability. In addition, Al-Jafar and Al-Samman (2015) found a positive impact of asset growth on the financial performance. Similarly, Nunes *et al.* (2009) revealed a positive effect of asset growth on return on assets (ROA). Based on it, this study develops the following hypothesis:

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

Board size

Board size refers to the number of individuals who serve as directors on a company's board of directors. Belkhir (2009) suggested that there is a positive relationship between board size and performance. Hoti and Dermaku (2018) stated that there is a positive and significant impact of board size on the financial performance. Guest (2009) concluded that there is a positive relationship between board size and performance. O'connell and Cramer (2010) revealed that that board size is significant and positively related to the firm performance. Kajola (2008) revealed that the board size has a positive relationship with net profit margin. Based on it, this study develops the following hypothesis:

H_2: There is a positive relationship between board size and bank profitability.

Debt to equity

Total debt to total equity ratio is the major ratio to measure financial leverage. The more debt financing a company uses, the higher its financial leverage. A high degree of financial leverage means high interest payments, which negatively affect the company's bottom line earnings per share. Profitability is negatively correlated to debt to equity (leverage) ratio (Shah *et al.*, 2004). Alzubi and Bani-Hani (2021) claimed that debt-to-equity have a substantially negative impact on industrial companies' performance. Likewise, Kusmayadi et al. (2018) analyzed the effect of net profit margin, price to book value, and debt to equity ratio on stock return. The study found that debt to

equity ratio have a negative impact on bank profitability. Similarly, Amato and Burson (2007) stated that debt to equity ratio is negatively related to performance. Based on it, the study develops the following hypothesis:

H_3: There is a positive relationship between debt to equity and bank profitability.

Firm size

The size of the bank is measured by the total assets. The size of the bank can alter the competition structure in the market and such banks can have economies of scale and economies of scope which then significantly improves the performance. Musah (2017) claimed that bank size is one of the major determinants of bank profitability. Ahmed (2022) suggested that there is a positive relationship between bank size and profitability. Anggari and Dana (2020) indicated that the bank size has a positive and significant effect on profitability. Merin (2016) revealed bank size has a positive effect on profitability measured by return on assets. Moreover, Sritharan (2015) found that firm's size is positively related to profitability measured of return on assets. Agbeja *et al.* (2015) examined there is a positive and significant relationship between firm size and bank's profitability. In addition, Ghafoorifard *et al.* (2014) determined the relationship between firm size and organizational performance in companies that listed on Tehran Stock Exchange in Iran. The study found that there is a significant and positive connection between firm size and organizational performance. Furthermore, Astutiningsih and Baskara (2019) showed that bank size has a positive and significant effect on profitability. Based on it, this study develops the following hypothesis:

H_4: There is a positive relationship between bank size and bank profitability.

Leverage

Isayas (2022) claimed that leverage has a positive and statistically significant effect on the profitability of banks. Kartikasari and Merianti (2016) found that the debt ratio has a significant negative effect on profitability. Farooq and Masood (2016) stated that financial leverage has a positive and statistically significant association with value of firm. However, Ibrahim and Isiaka (2020) showed that financial leverage has a significantly positive effect on firm value. Okoye (2019) indicated that the relationship between ROE and debt ratio is also negative but insignificant. Ahmed (2015) found that financial leverage has a statistically significant inverse impact on profitability at 99% confidence interval. Based on it, this study develops the following

hypothesis:

H_5: There is a negative relationship between leverage and bank profitability.

Number of branches

The number of branches can vary greatly among companies and can be influenced by factors such as business size, industry, expansion strategy, and target market. Berger *et al.* (1997) found that there is a positive and significant relationship between number of branches and firm profitability. Akhavein (2005) showed that number of branches and size are positively related to the profitability of banking system. According to Soteriou and Zenios (1997), number of branches have significant positive relationship with the profitability which increase the bank efficiency along with service quality and operations simultaneously. Saloner and Shepard (1995) revealed that number of branches have positive and significant impact on bank profitability. Al-Homaidi *et al.* (2018) stated that the number of branches is the most significant bank-specific determinants that influence the banks' profitability. Based on it, this develops the following hypothesis.

H_6: There is a positive relationship between number of branches and bank profitability.

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of the selected dependent and independent variables during the period 2014/15 to 2021/22.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 15 Nepalese commercial banks for the study period of 2014/15 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total asset, in percentage) and NIM (Net interest margin as measured by the net interest income to total assets). The independent variables are AG (Asset growth as measured by difference in current year total asset and previous year total to previous year total asset, in percent), BS (Board size as measured by total number directors on the board, in percent), DE (Debt to equity ratio as measured by total debt to total equity-to-deposit, in percent), FS (Firm size as measured by total assets, Rs. in billion), LEV (Leverage is measure as the degree to which a firm's capital structure comprises more of total debt as against equity, in percent), and NOB (Number of branches of the listed banks, in numbers).

Variables	Mean	Std Dev	Minimum	Maximum
ROA	1.58	0.51	0.6	3.6
NIM	3.15	0.78	0.3	5.6
AG	0.21	0.14	-0.03	0.81
BS	7.14	1.37	5	12
DE	8.19	2.27	4.1	15.6
FS	134.55	69.24	37.4	358.6
LEV	88.71	3	81.2	95.7
NOB	134.94	78.84	32	359

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 descriptive statistics of dependent and independent variables of 15 Nepalese commercial banks for the study period of 2014/15 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total asset, in percentage) and NIM (Net interest margin as measured by the net interest income to total assets). The independent variables are AG (Asset growth as measured by difference in current year total asset and previous year total to previous year total asset, in percent), BS (Board size as measured by total number directors on the board, in percent), DE (Debt to equity ratio as measured by total debt to total equity-to-deposit, in percent), FS (Firm size as measured by total assets, Rs. in billion), LEV (Leverage is measure as the degree to which a firm's capital structure comprises more of total debt as against equity, in percent), and NOB (Number of branches of the listed banks, in numbers).

Variables	ROA	NIM	AG	BS	DE	FS	LEV	NOB
ROA	1							
NIM	0.679**	1						
AG	-0.165	-0.267**	1					
BS	0.158	0.131	0.224*	1				
DE	-0.338**	-0.377**	0.199*	0.154	1			
FS	-0.272**	-0.036	-0.195*	-0.088	0.334**	1		
LEV	-0.457**	-0.473**	0.205*	0.195*	0.879**	0.168	1	
NOB	-0.005	0.260**	-0.17	0.077	0.085	0.772**	-0.081	1

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

Table 3 shows that the asset growth has a negative relationship with the

return on assets. It means that increase in the asset growth leads to decrease in return on assets. On the other hand, board size has a positive relationship with the return on assets. It indicates that increase in board size leads to increase in return on assets. Similarly, debt to equity ratio has a negative relationship with return on assets. It means that increase in debt to equity ratio leads to decrease in return on assets. Furthermore, firm size is negatively related to return on assets. It shows that larger the firm size, lower would be the return on assets. Similarly, leverage is negatively related to return on assets. It means that increase in leverage leads to decrease in return on assets. Moreover, number of branches have negative relationship with return on assets. It means that increase in number of branches leads to decrease in return on assets.

Similarly, the result also shows that asset growth has a negative relationship with net interest margin. It means that decrease in asset growth leads to decrease in net interest margin. However, there is a positive relationship between board size and net interest margin. It means that increase in board size leads to increase in net interest margin. Furthermore, there is a negative relationship between debt-to-equity ratio and net interest margin. It indicates that increase in debt-to-equity ratio leads to decrease in net interest margin. Moreover, firm size is negatively related to net interest margin. It shows that larger the firm size, lower would be the net interest margin. In addition, the leverage has a negative relationship with net interest margin. It indicates that increase in leverage leads to decrease in net interest margin. In contrast, this study shows that there is a positive relationship between number of branches and net interest margin. It means that that increase in number of branches leads to higher net interest margin.

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 asset growth, board size, debt to equity, firm size, number of branches, and leverage with net interest margin of Nepalese commercial banks.

Table 4

Estimated regression results of asset growth, board size, debt to equity, firm size, number of branches, and leverage with on return on assets

The results are based on panel data of 15 commercial banks with 120 observations for the period of 2014/15 to 2021/22 by using the linear regression model and the model is $ROA = \beta_0 + \beta_1 AG + \beta_2 BS + \beta_3 DE + \beta_4 FS + \beta_5 NOB + \beta_6 LEV + e_{it}$ where, the dependent variable

is ROA (Return on assets as measured by the ratio of net profit to total asset, in percentage). The independent variables are AG (Asset growth as measured by difference in current year total asset and previous year total to previous year total asset, in percent), BS (Board size as measured by total number directors on the board, in percent), DE (Debt to equity ratio as measured by total debt to total equity-to-deposit, in percent), FS (Firm size as measured by total assets, Rs. in billion), LEV (Leverage is measure as the degree to which a firm's capital structure comprises more of total debt as against equity, in percent), and NOB (Number of branches of the listed banks, in numbers).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		AG	BS	DE	FS	LEV	NOB			
1	1.71 (20.18)**	-0.61 (1.81)						0.02	0.50	3.29
2	1.16 (4.73) **		0.06 (1.74)					0.02	0.50	3.01
3	2.20 (13.36) **			-0.08 (3.91) **				0.11	0.48	15.26
4	1.85 (18.80) **				-0.0020 (3.064) **			0.07	0.49	9.39
5	8.45 (6.85) **					-0.08 (5.58) **		0.20	0.45	31.11
6	1.58 (17.10) **						-0.005 (0.06)	0.01	0.51	0.001
7	1.20 (4.97) **	-0.78 (2.30)*	0.08 (2.24)*					0.05	0.49	4.20
8	1.68 (6.54) **	-0.56 (1.72)	0.09 (2.82) **	-0.08 (-4.01) **				0.16	0.47	8.52
9	1.82 (6.98) **	-0.74 (2.26)*	0.08 (2.63) **	-0.06 (-2.87) **	-0.0015 (2.202)*			0.19	0.46	7.81
10	14.42 (6.59) **	-0.80 (2.74) **	0.10 (3.51) **	-0.13 (3.49) **	-0.0024 (3.929) **	-0.16 (5.78) **		0.36	0.40	14.68
11	13.45 (6.12) **	-0.80 (2.76) **	0.08 (2.81) **	-0.13 (3.48) **	-0.0037 (3.753) **	-0.15 (5.31) **	0.0014 (1.661)	0.37	0.40	12.88

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 asset growth are negative with return on assets. It indicates that asset growth has a negative impact on return on assets. This finding contradicts with the findings of Al-Jafar and Al-Samman (2015). In addition, the beta coefficients for board size are positive with return on assets. It indicates that board size has a positive impact on return on assets. The finding is similar to the findings of O'connell and Cramer (2010). The beta coefficients for debt to equity are negative with return on assets. It indicates that debt to equity has a negative impact on the return on assets. The finding is similar to the findings of Amato and Burson (2007) Likewise, the beta coefficients for firm size are positive with return on assets. It indicates that firm size has a positive impact on return on assets. This finding is consistent with the findings of Sritharan (2015). Moreover, the

beta coefficients for leverage are negative with return on assets. It indicates that leverage has a negative impact on the return on assets. This finding is consistent with the findings of Farooq and Masood (2016).

Table 5 shows the estimated regression results of asset growth, board size, debt to equity, firm size, number of branches, and leverage with net interest margin of Nepalese commercial banks.

Table 5

Estimated regression results of asset growth, board size, debt to equity, firm size, number of branches, and leverage with net interest margin

The results are based on panel data of 15 commercial banks with 120 observations for the period of 2014/15 to 2021/22 by using the linear regression model and the model is NIM = $\beta_0 + \beta_1$ AG + β_2 BS + β_3 DE + β_4 FS + β_5 NOB + β_6 LEV + e_{it} where, the dependent variable is NIM (Net interest margin as measured by the net interest income to total assets). The independent variables are AG (Asset growth as measured by difference in current year total asset and previous year total to previous year total asset, in percent), BS (Board size as measured by total number directors on the board, in percent), DE (Debt to equity ratio as measured by total debt to total equity-to-deposit, in percent), FS (Firm size as measured by total assets, Rs. in billion), LEV (Leverage is measure as the degree to which a firm's capital structure comprises more of total debt as against equity, in percent), and NOB (Number of branches of the listed banks, in numbers).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		AG	BS	DE	FS	LEV	NOB			
1	3.47 (27.33)**	-1.51 (3.01) **						0.06	0.75	9.09
2	2.62 (6.92) **		0.07 (1.43)					0.01	0.78	2.05
3	4.21 (16.93) **			-0.13 (4.42) **				0.14	0.72	19.58
4	3.20 (20.45) **				-0.004 (0.39)			0.01	0.78	0.16
5	14.07 (7.51) **					-0.12 (5.83) **		0.22	0.69	34.04
6	2.8 (20.41) **						0.001 (2.93) **	0.06	0.76	8.56
7	2.71 (7.47) **	-1.77 (3.49) **	0.11 (2.24)*					0.09	0.74	7.21
8	3.49 (9.14) **	-1.41 (2.95) **	0.14 (2.89) **	-0.13 (4.38) **				0.24	0.69	11.94
9	3.41 (8.65) **	-1.31 (2.63) **	0.14 (2.95) **	-0.14 (4.33) **	-0.001 (0.8)			0.21	0.69	9.09
10	17.34 (5.00) **	-1.37 (2.93) **	0.16 (3.51) **	-0.08 (1.31)	-0.002 (0.25)	-0.18 (4.04) **		0.31	0.65	11.5
11	14.86 (4.37) **	-1.36 (3.06) **	0.11 (2.38)*	-0.08 (1.31)	-0.004 (2.83) **	-0.14 (3.37) **	0.001 (3.39) **	0.36	0.62	12.39

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. Net interest margin is the dependent variable.

Table 5 shows that the beta coefficients for asset growth are negative with net interest margin. It indicates that the asset growth has a negative impact with the net interest margin. This finding is similar to the findings of Bayyurt (2007). The beta coefficients for board size are positive with net interest margin. It indicates that board size has a positive impact on net interest margin. This finding is consistent with the findings of Hoti and Dermaku (2018). Similarly, the beta coefficients for debt-to-equity ratio are negative with net interest margin. It indicates that debt to equity ratio has a negative impact on net interest margin. This finding is similar to the findings of Alzubi and Bani-Hani (2021). Likewise, the beta coefficients for firm size are positive with net interest margin. It indicates that firm size has a positive impact on net interest margin. This finding is inconsistent with the findings of Musah (2017). Moreover, the beta coefficients for leverage are negative with net interest margin. It indicates that leverage has a negative impact on the net interest margin. This finding is consistent with the findings of Kartikasari and Merianti (2016).

4. Summary and conclusion

Banking is considered as the important and influential sectors for the economy of the country. The growth and development of financial institution in the economy is largely determined by the level of profit gained in its operational activities. Profitability is one of the significant components of the business including the banking world because it contributes to maintain destructive macroeconomic financial tremors through absorbing and contributes financially to stabilize the financial system.

This study attempts to examine the impact of financial leverage, growth, and size on the profitability of Nepalese commercial banks. The study is based on the secondary data of 15 commercial banks with 120 observations for the period from 2014/2015 to 2021/2022.

The study showed that asset growth and bank size have negative impact on return on assets and net interest margin. Similarly, debt to equity and financial leverage has a negative impact on return on assets and net interest margin. Likewise, number of branches has a negative impact on return on assets. However, number of branches has a positive impact on net interest margin. Likewise, the study also concluded that board size has a positive impact on the net interest margin and return on assets. It indicates that the increase in board size leads to increase in the net interest margin and return on assets. The size of a board can influences decision-making processes. A

larger board may have more diverse perspectives and expertise, which could potentially lead to more comprehensive discussions and better-informed decisions. However, a larger board may also encounter challenges in achieving consensus or efficient decision-making. The study also concluded that the dominant factors that affect the return on assets is leverage ratios.

References

Abata, M. A., 2014. Asset quality and bank performance: A study of commercial banks in Nigeria. *Research Journal of Finance and Accounting* 5(18), 39-44.

Abate, T. W., and E. A. Mesfin, 2019. Factors affecting profitability of commercial banks in Ethiopia. *International Journal of Research and Analytical Review* 6(1), 881-891.

Abbas, F., S. Ali, and M. Ahmad, 2021. Does economic growth affect the relationship between banks' capital, liquidity and profitability: An empirical evidence from emerging economies. *Journal of Economic and Administrative Sciences* 1(1), 1-9.

Agbeja, O., O. J. Adelakun, and F. I. Olufemi, 2015. Capital adequacy ratio and bank profitability in Nigeria: A linear approach. *International Journal of Novel Research in Marketing Management and Accounting* 2(3), 91-99.

Agiobenebo, T. J., and B. C. Ezirim, 2002. Impact of financial intermediation on the profitability of insurance companies in Nigeria. *First Bank of Nigeria Quarterly Review* 2(1), 4-14.

Ahmed, A. M., 2022. The relationship between firm size and profitability: Evidence from the commercial banks in Iraq. *The Scientific Journal of Cihan University-Sulaimaniya* 6(1), 145-156.

Ahmed, L., 2015. The effect of foreign exchange exposure on the financial performance of commercial banks in Kenya. *International Journal of Scientific and Research Publications* 5(11), 115-120.

Akhavein, J., 2005. The diffusion of financial innovations: A examination of the adoption of small business credit scoring by large banking organizations. *Journal of Business* 78(1), 577-596.

AlGhusin, N. A. S., 2015. The impact of financial leverage, growth, and size on profitability of Jordanian industrial listed companies. *Research Journal of Finance and Accounting* 6(16), 86-94.

Al-Homaidi, E. A., M. I. Tabash, N. H. S. Farhan, and F. A. Almaqtari, 2018.

Bank-specific and macro-economic determinants of profitability of Indian commercial banks: A panel data approach. *Cogent Economics and Finance* 6(1), 1-26.

Al-Jafar, M. K., and C. K. Al-Samman, 2015. Determinants of profitability: Evidence from industrial companies listed on Muscat Securities Market. *Review of European Studies* 7(11), 303-311.

Ally, Z., 2013. Comparative analysis of financial performance of commercial banks in Tanzania. *Research Journal of Finance and Accounting* 4(19), 133-143.

Almaqtari, F. A., E. A. Al-Homaidi, M. I. Tabash, and N. H. Farhan, 2019. The determinants of profitability of Indian commercial banks: A panel data approach. *International Journal of Finance and Economics* 24(1), 168–185.

Alzubi, K., and A. Bani-Hani, 2021. Determinants of debt-to-equity and its impact on the performance of industrial companies listed on Amman Stock Exchange. *Journal of Governance and Regulation* 10(4), 353–364.

Amato, L. H., and T. E. Burson, 2007. The effects of firm size on profit rates in the financial services. *Journal of Economics Education Research* 8(1), 67–81.

Anafo, S. A., L. Yin, and E. Amponteng, 2015. The impact of capital structure on profitability of banks listed on the Ghana Stock Exchange. *Research Journal of Finance and Accounting* 6(16), 26–33.

Anggari, N. L. S., and I. M. Dana, 2020. The effect of capital adequacy ratio, third party funds, loan to deposit ratio, bank size on profitability in banking companies on IDX. *American Journal of Humanities and Social Sciences Research* 4(12), 334–338.

Ashraf, M., Z. Haider, and M. B. Sarwar, 2017. Bank specific and macroeconomic determinants impact on banks profitability: Evidence from Asian countries. *International Journal of Sciences* 33(3), 187-199.

Astutiningsih, K. W., and I. G. K. Baskara, 2019. Pengaruh car, dana pihak ketiga, ukuran bank, dan LDR terhadap profitablilitas bank perkreditan rakyat. *E-Jurnal Manajemen Universitas Udayana* 8(3), 1608–1636.

Ayuningrum, A. P., 2021. The effect risk of credit, efficiency, and GCG of bank profitability (study in conventional commercial banks registered on the Indonesia Stock Exchange period 2012-2019). *Management Analysis Journal* 10(2), 139–145.

Bayyurt, N., 2007. The performance of Turkish manufacturing firms in stable and

unstable economic periods. *South East European Journal of Economics and Business* 2(2), 25–34.

Belkhir, M., 2009. Board of directors' size and performance in the banking industry. *International Journal of Managerial Finance* 5(2), 201–221.

Berger, A. N., J. H. Leusner, and J. J. Mingo, 1997. The efficiency of bank branches. *Journal of Monetary Economics* 40(1), 141–162.

Budhathoki, P. B., C. K. Rai, K. P. Lamichhane, G. Bhattarai, and A. Rai, 2020. The impact of liquidity, leverage, and total size on banks' profitability: Evidence from Nepalese commercial banks. *Journal of Economics and Business* 3(2), 545–555.

Dahmash, F. N., 2015. Size effect on company profitability: Evidence from Jordan. *International Journal of Business and Management* 10(2), 58–72.

Dogan, M., 2013. Does firm size effect the firm profitability? Evidence from Turkey. *Research Journal of Finance and Accounting* 4(4), 53–59.

Doyran, M. A., 2013. Net interest margins and firm performance in developing countries: Evidence from Argentine commercial banks. *Management Research Review* 36(7), 720–742.

Esra, M. A., 2020. Analisis pengaruh asset growth, return on assets, dan debt to equity ratio terhadap dividend payout ratio pada perusahaan manufaktur yang terdaftar di bursa efek indonesia periode 2016-2018. *Jurnal Ilmiah Manajemen Dan Bisnis* 5(1), 44–59.

Farooq, M., S. Khan, A. Siddiqui, M. Khan, and M. Khan, 2021. Determinants of profitability: A case of commercial banks in Pakistan. *Humanities and Social Sciences Reviews* 9(2), 01–13.

Gaio, C., and R. Henriques, 2018. Are large firms more profitable than small and medium firms in the European Union? *The European Journal of Management Studies* 23(1), 25–48.

Ghafoorifard, M., B. Sheykh, M. Shakibaee, and N. S. Joshaghan, 2014. Assessing the relationship between firm size, age, and financial performance in listed companies on Tehran Stock Exchange. *International Journal of Scientific Management and Development* 2(11), 631–635.

Guest, P. M., 2009. The impact of board size on firm performance: evidence from the UK. *The European Journal of Finance* 15(4), 385-404.

Hossain, M. S., and A. M. N. Saif, 2019. Impact of firm size on financial performance of banking companies in Bangladesh. *Journal of Banking and Financial Services* 11(2), 143–160.

Hoti, A., and A. Dermaku, 2018. Corporate governance in the banking industry of Kosovo: Does board size and board independence matter? *International Journal of Finance and Banking Studies* 7(3), 20–34.

Ibrahim, U. A., and A. Isiaka, 2020. Effect of financial leverage on firm value: Evidence from selected firm quoted on the Nigerian Stock Exchange. *European Journal of Business and Management* 12(3), 124–135.

Isayas, Y. N., 2022. Determinants of banks' profitability: Empirical evidence from banks in Ethiopa. *Cogent Economics and Finance* 10(1), 1–15.

Kajola, S. O., 2008. Corporate governance and firm performance: The case of Nigerian listed firms. *European Journal of Economics, Finance and Administrative Sciences* 14(14), 16-28.

Kartikasari, D., and M. Merianti, 2016. The effect of leverage and firm size to profitability of public manufacturing companies in Indonesia. *International Journal of Economics and Financial Issue* 6(2), 409–413.

Karugu, K. P., W. D. Muturi, and S. M. A. Muathe, 2021. Microfinance in Africa: Interest rate, financial leverage, and financial performance: Experience and lessons in Kenya. *Journal of Applied Economics and Business* 9(2), 22–44.

Kassem, N. M., and A. Sakr, 2018. The Impact of bank-specific characteristics on the profitability of commercial banks in Egypt. *Journal of Finance and Bank Management* 6(2), 76–90.

Kawshala, H., and K. Panditharathna, 2017. The factors effecting on bank profitability. *International Journal of Scientific and Research Publication* 7(2), 212–216.

Khan, F., H. J. Habib, and M. I. Wazir, 2016. Impact of debt on profitability of firms: Evidence from non-financial sector of Pakistan. *City University Research Journal*, 6(1), 70–80.

Kusmayadi, D., R. Rahman, and Y. Abdullah, 2018. Analysis of the effect of net profit margin, price to book value, and debt to equity ratio on stock return. *International Journal of Recent Scientific Research* 9(7), 28091-28095.

Markonah, M., and J. H. Prasetyo, 2022. The impact of good corporate governance on financial performance: Evidence from commercial banks in Indonesia. *The Journal of Asian Finance, Economics and Business* 9(6), 45–52.

Mennawi, A. N. A., 2020. The impact of liquidity, credit, and financial leverage risks on financial performance of Islamic banks: A case of Sudanese banking sector. *Risk and Financial Management* 2(2), 59–72.

Merin, M. A., 2016. Determinants of bank profitability in Ethiopia: A case study of private commercial banks. *Research Journal of Finance and Accounting* 7(7), 28–43.

Missy, Y., U. Budiyanto, and S. N. Riyadi, 2016. Influence of capital structure, size, and growth on profitability and corporate value. *International Journal of Business and Finance Management Research* 9(5), 80–101.

Musah, A., 2017. The impact of capital structure on profitability of commercial banks in Ghana. *Asian Journal of Economic Modelling*, *6*(1), 21–36.

Musau, S., 2022. Deepening financial inclusion and stability of commercial banks in Kenya: Synergies and trade-offs. *International Academic Journal of Economics and Finance* 3(7), 143–155.

Ndubuisi, K., I. Juliet, and J. I. Onyema, 2019. Effect of financial leverage on profit growth of quoted non-financial firms in Nigeria. *Journal of Financial Management of Property and Construction* 3(1), 9–14.

Nunes, P. J., Z. M. Serrasqueiro, and T. N. Sequeira, 2009. Profitability in Portuguese services industries: A panel data approach. *The Service Industries Journal* 29(5), 693–707.

O'connell, V., and N. Cramer, 2010. The relationship between firm performance and board characteristics in Ireland. *European Management Journal* 28(5), 387-399.

Okoye, G. O., 2019. Financial leverage and profitability performance of financial institution. *Global Journal of Education, Humanities and Management Science* 1(2), 203–207.

Oli, S. K., 2021. Financial leverage and performance of Nepalese commercial banks. *Asia Social Science Academy* 2(3), 49–70.

Rajbahak, S., S. Rijal, and S. Shrestha, 2017. Impact of board size, foreign ownership, firm size, debt to equity, firm age and firm growth on bank performance in Nepal. *Nepalese Journal of Corporate Governance* 1(1), 59–70.

Randika, D., 2022. Effect of financial leverage on firm performance: Reference to investment trust companies listed in Sri Lanka. *International Journal of Research in Social Science and Humanities* 3(4), 17–25.

Rauniyar, K., L. Bhurtel, M. Shrestha, M. Shrestha, and N. Shrestha, 2016. Impact of corporate governance in controlling fraud in the context of Nepalese commercial banks. *Nepalese Journal of Management* 3(1), 146–156.

Rehman, Z., and D. Muhammad, 2020. The board size and board composition impact on financial performance: Evidence from the Pakistani and Chinese listed banking sector. *The Journal of Asian Finance, Economics and Business* 7(4), 81–95.

Saloner, G., and A. Shepard, 1995. Adaptation of technologies with network effects: An empirical examination of the adoption of automated teller machines. *Journal of Economics* 26(3), 479–501.

Sangmi, M. D., and T. Nazir, 2010. Analyzing financial performance of commercial banks in India: Application of CAMEL model. *Pakistan Journal* of *Commerce* and *Social Sciences* 4(1), 40–55.

Shah, A., T. Hijazi, and A. Y. Javed, 2004. The determinants of capital structure of stock exchange-listed non-financial firms in Pakistan. *The Pakistan Development Review* 43(4), 605–618.

Sheikh, N. A., and S. Karim, 2015. Effects of internal governance indicators on performance of commercial banks in Pakistan. *Pakistan Journal of Social Sciences* 35(1), 61-75.

Silva, O. D., and Y. M. Hewage, 2022. The impact of board size and audit committee characteristics on firm's financial performance: Evidence from licensed commercial banks in Sri Lanka. *Global Journal of Accounting and Economy Research* 3(1), 5–34.

Soteriou, A., and S. A. Zenios, 1997. Efficiency, profitability, and quality of banking services. *International Journal of Bank Marketing* 18(5), 97–128.

Sritharan, V., 2015. Does firm size influence on firm's profitability? Evidence from listed firms of Sri Lankan hotels and travels sector. *Research Journal of Finance and Accounting* 6(6), 201–207.

Taani, K., 2013. Capital structure effects on banking performance: A case study of Jordan. *International Journal of Economics, Finance, and Management Sciences* 1(5), 227–233.

Tafri, F. H., Z. Hamid, A. K. M. Meera, and M. A. Omar, 2009. The impact of financial risks on the financial performance of Malaysian commercial banks. *International Journal of Social, Human Science and Engineering* 3(6), 268–282.

Tharu, N. K., and Y. M. Shrestha, 2019. The influence of bank size on profitability: An application of statistics. *International Journal of Financial, Accounting, and Management* 1(2), 81–89.

Velnampy, T., and B. Nimalathasan, 2010. Firm size on profitability: A comparative study of bank of Ceylon and commercial bank of Ceylon Limited in Sri Lanka. *Global Journal of Management and Business Research* 10(2), 14–25.

Widiyasumarlin, S., and S. Riadi, 2022. The effect of lending, third party funds, number of branch offices and non-performing loans on banking profitability. *Jurnal Akuntansi Dan Investasi* 7(2), 49–63.

Yadev, R., and M. Salim, 2012. Capital structure and firm performance: Evidence from US bank profitability. *The European Journal of Finance* 21(5), 426–443.

Yin, H., J. Yang, and X. Lu, 2020. Bank globalization and efficiency: Host- and home-country effects. *Research in International Business and Finance* 54(2), 1–19.