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The Effect of Specific Factors on Bank Profitability: Evidence from Nepalese Banks

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Abstract

This paper examines the impact of assets quality, capital adequacy ratio, assets diversification and operating efficiency on banks' profitability. This study employs bank scope data of eight commercial banks during the period of 2002/03 – 2016/17. Altogether, there are 96 observations are made in the study. The ordinary least squares model is used to analyze the data. The results indicate that three predictor variables assets quality, operating efficiency, and capital adequacy ratio significantly affect bank profitability. But the predictor variable diversification does not affect banks' profitability significantly. The results of this study help the bankers and policymakers to take effective action in order to improve banks' profitability.

Keywords: Capitalization, Asset Quality, Operating Efficiency, Bank Diversification

1. Introduction

Nepal government initiated financial rector reform in the mid-1980s and had implemented a comprehensive financial sector program in 2001 (Shrestha, 2004). The objectives of these reforms were to create an efficient, competitive, transparent, discipline and profitable banking sector to foster economic growth of the nation. Since the liberalization, the Nepalese financial sector widened. The elimination of government intervention and private sector participation has significantly contributed to this expansion (Bhetuwal, 2007). This widened financial sector brings a large number of financial institutions and has created intense competition among them (Panta, 205). The fierce competition within financial institutions brings both opportunities and threats to the economy. Intense competition within financial institutions may increase or decrease the banks' profitability. While the banks cannot generate sufficient profit to run the business, then they become insolvent and increase financial instability. Further, it brings contaminate effects in the financial system. When any financial institution develops serious problems that reach public notice, the public's confidence in other financial institutions may be damaged as well (Rose, 2002). The results may be serious due to the smaller flow of saving to investment which adversely affects the job opportunity and economic growth rate. Nepal has a bank dominated economy (Kharel & Pokhrel,

2012). The role of banking sectors in bank dominated economy is more than the capital dominated economy. The success of the commercial banking sector plays a key role in promoting economic growth in Nepal. Therefore, Profit is essential to survive in the long-run. There are two important conflicting paradigms regarding the banks' profitability: Structure-Conduct-Performance (SCP) hypothesis and Efficient Structure (ES) hypothesis. On the one hand, the SCP hypothesis argues that a smaller number of firms operating in the market have the ability to obtain higher profit through the collusion among banks. In other words, they can obtain more profit by charging higher loan rates and offering low deposit rates (Tan & Floros, 2014). On the other hand, ES structure hypothesis argues that efficient banks can produce large varieties of service products at a lower cost, able to compete more aggressively in the competitive market, capture a bigger market share (Tan & Floros, 2014) allow banks to increase their size (Curak, Poposki & Pepur, 2012) and get an advantage of economies of scale to earn high profit. Similarly, there are two contrasting views regarding the association between capital and profitability. On the one hand, the signaling hypothesis states that the high capital of banks conveys positive signals in the market. If the debtors and depositors take it positively then the cost of funds might decrease and banks' profit increases.

Banks with higher capital are capable of absorbing any negative shocks and assumed to possess less insolvency. Higher capital may also incentivize shareholders to monitor management activities; therefore lower the probability of taking an excessive risk by managers (Ahemed, 2017). On the other hand, the risk-return hypothesis states that there is a direct relationship exist between risk and return; a higher capital ratio decreases the risk of the firms and leads to lower performance of the banks. Additionally, the trade-off theory states that greater the use of debt (lower the use of equity) increases the banks' interest expenses and the bank may not able to meet its financial duties on time. Consequently, the required rate of return on new capital will increase and the probability of bankruptcy cost also increases which reduce bank profitability (Saona, 2016).

Basically, it can be expected that there is a positive relationship between asset quality and bank performance. In other words, there is an inverse relationship existing between provision for loan loss ratio and ROA and NIM. Bank asset quality has been responsible for the success or failure of the bank. The best measure for assessing the quality of assets is loan loss provisions to loan ratio. Loan loss provision is the ratio of the loan loss provisions to loans, a measure of the quality of loans granted by banks (Damtsa, Milidonis, & Stathopoulos, 2019). There are two contrasting facts regarding the relationship between asset quality and banks' profitability. On the one hand, some scholars argue that the decreases of assets quality increase the proportion of non-performing assets, possible loan loss provision and monitoring cost of the banks; which leads to a decrease in banks' profitability. On the other hand, some scholars argue that the decreases of assets quality increase the loan loss provision, and increase default loss which can be compensated through higher interest margin because high risk should pay high prices to the banking services (Saona, 2016).

Basically, it can be expected that there is an inverse relationship between operating efficiency (lower cost to income ratio) and bank performance. There are two contrasting facts regarding the relationship between operating efficiency and banks' profitability. On the one hand, it can be expected that the operating cost is positively related to bank profitability with regards to ROA and NIM. This statement can be explained by the fact that profit is the difference between total revenue and total cost which clearly states that high operating cost reduces the banks' profitability. On the other hand, opponents of this arguments states that large volume of operating expenses is derived from paying salaries and wages to staff, while higher levels of salaries and wages paid to staff significantly improve the staff productivity, while the resulting improvement in the bank profitability is much larger than the salaries and wages paid out by the bank (Tan, 2016). In other words, the higher level of wages and salaries increase the employees' loyalty, decrease the supervision cost, and attract high-quality workers to the banks. All the factors that impact banks' profitability mainly studied in developed and developing countries but very few kinds of literature are found in the context of low-income countries such as Nepal. Therefore, the aim of this study is to examine the impact of capitalization, asset quality, operating efficiency, and bank diversification on the profitability of Nepalese commercial banks.

2. Literature Review

2.1 Capitalization and bank profitability

Bank capital is considered as one of the important factors affecting bank profitability. The bank's equity capital directly influences the rate of return on equity. The leverage ratio can affect the growth rate of the bank also. In the extreme, if losses exceeded bank capital, the bank would be insolvent and subject to closure by the chartering agency (Gup & Kolari, 2012). The capital fund of the commercial bank plays several roles: first, it protects banks from insolvency risk. Second, capital promotes public confidence in a bank and reassures its creditors (including depositors) of the bank's financial strength. Third, the capital provides funds for the organization's growth and development of new services, programs, and facilities. Fifth, capital serves as regulators of bank growth. Finally, it protects the government's deposit insurance system from series losses (Rose, 2002). Existing literature reveals two contrasting empirical pieces of evidence of capitalization on bank profitability. In the one extreme, it is expected that there is direct association between capital ratio and bank's profitability because it reduced the funding cost due to the fact that it increases banks' creditworthiness; the banks with higher capital levels are more likely to engage in prudent lending; capital plays an important role in absorbing the risk arising from higher-risk assets, such as loans; and the banks with higher capital levels need to borrow less, which reduce cost and further increases profitability (Tan, 2016). A study conducted by Trad, Trabelsi, & Goux in 2017 entitled 'Risk and profitability of Islamic banks: A religious or an alternative solution?' and found a positive and very significant effect of capital on banks' profitability. They argued that a significant level of capital makes for better protection against banking crises. In light of these results, it seems that capital adequacy was a safety valve and a guarantee of bank profitability and stability. Therefore, the bank should maintain a minimum capital to ensure sufficient funds against unexpected losses and negative shocks (p. 43). Similarly, Ahamed in 2017 found that larger banks, greater equity capital, and greater composition of assets in the form of loans are positively and significantly associated with profits and risk-adjusted assets. But a study conducted by Patria, Capraru & Ihnatov in 2015 entitled 'Determinants of banks' profitability: Evidence from EU 27 banking system' and found an insignificant relationship between capital adequacy ratio and shareholders' return. They argued that a high capital adequacy ratio may reduce the risk of the banks but at the same time they would not get the benefit of the leverage effect. In another extreme, Saona in 2016 found a negative relationship between the bank's performance and capitalization ratio. This result can be explained by the fact that the high capital ratio decreases both the risk of the banks and tax subsidy form interest expenses. Overly conservative management might not be taking advantage of certain market opportunities and consequently experiencing lower performance (Saona, 2016). The third line of empirical evidence advocates that there is no relationship between capital adequacy ratio and banks' profitability. A study conducted by Bhattarai in 2016 found an insignificant association capital adequacy ratio and Nepalese banks' profitability. A similar result was found by Dietrich, & Wanzenried in 2014 in low-and-middle countries. This result can be explained by the fact that they did not able to generate more loans and absorb more losses and fail to support the regulator's recapitalization policy.

2.2 Asset quality and bank profitability

Existing literature reveals two contrasting empirical shreds of evidence on the impact of capitalization on the bank's profitability. Asset quality also directly influences the rate of return on assets. (Gup & Kolari, 2012). The quality of assets can be deteriorated due to the high competition within financial institutions. On the one hand, it can be argued that the decreases in assets quality increase the proportion of non-performing assets, possible loan loss provision and monitoring cost of the banks; which leads to a decrease in banks' profitability. So, it can be expected that there is a positive relationship between asset quality and the bank's performance. In other words, there is an inverse relationship exist between provision for loan loss ratio and ROA and NIM. A study conducted by Patria, Capraru & Ihnatov in 2015 entitled 'determinants of banks' profitability: Evidence from EU 27 banking system' and found an inverse and statistically relationship between provision for loan losses to loan ratio and banks profitability. It means that the higher this ratio, the lower the banks' profitability and vice versa. In other words, the quality of the asset directly affects the bank's profitability. A similar result was found by Bhatta in 2015 argued that an increase in loan loss of the bank results in a decline in owners' equity and constrains the lending capacity of the bank which further reduces the amount of loan disbursement. These results can explain the fact that a low-quality ratio produces higher non-performing assets and increases loan loss

provision for protection against default loss; which leads to lower the bank's profitability. On the other hand, it can be argued that there is a positive and statistically significant relationship between LLRGL and ROA and NIM. A study conducted by Trad, Trabelsi, & Goux in 2017 entitled 'Risk and profitability of Islamic banks: A religious or an alternative solution?' and found a positive and statistically significant association between loan loss reserve to gross loan ratio (LLRGL) and ROA and ROE. This result can be explained by the fact that relaxing credit standard increases both loan loss reserves and gross loan of the banks. It also increases the banks' profitability. Basically, it can be expected that there is a positive relationship between asset quality and bank performance. In other words, there is an inverse relationship existing between provision for loan loss ratio and ROA and NIM. Bank asset quality has been responsible for the success or failure of the bank. The best measure for assessing the quality of assets is loan loss provisions to loan ratio. Loan loss provision is the ratio of the loan loss provisions to loans, a measure of the quality of loans granted by banks (Damtsa, Milidonis, & Stathopoulos, 2019). The structure- Conduct-Performance hypothesis posits that a lower competitive loan market will lead to an improvement in profitability for all three different ownership types of Chinese banks (Fang, Lau, Lu, Tan & Zhang, 2019).

2.3 Bank diversification and bank profitability

Existing literature reveals two contrasting empirical pieces of evidence of capitalization on the bank's profitability. Sources of income other than earnings from loans and securities are called simply non-interest income and usually include fees earned from offering trust department services (locker facility), service charges on deposit accounts and miscellaneous fees and charges for other bank services. Recently, bankers have targeted non-interest income or fee income as a key source of future revenues. By more aggressively selling services other than loans such as security brokerage, insurance, and trust services bankers have found a promising channel for boosting the bottom line on their income statement, for diversifying their income sources and for insulating their banks more adequately from the fluctuation of interest rate (Rose, 2002). A study performed by Tan in 2016 and found a significant and negative impact of diversification on bank profitability (NIM). It suggests that the higher level of diversified business precedes a decline in bank profitability. This result can be explained by the fact that a larger variety of businesses engaged by banks reduces the volume of funds available for traditional loan business, which precedes a decline in NIM (Tan, 2016). NIM concentrates on interest-generating activities only. While the banks engaging in the non-interest generating businesses reduces the volumes of traditional loan business, which further proceeds a decrease in NIM of commercial banks (Fang, Lau, Lu, Tan & Zhang, 2019). The results show that banks with low-asset-quality tend to generate more profits by having more non-interest sources of income. His study showed that public and private banks earn higher profits by shifting toward non-interest sources of income from the traditional interest-based income. Over the last decade asset quality of Indian banks has deteriorated continuously. Therefore, to offset the loss of traditional interest-based income, many banks have started providing interest-based, commission, and trading based activities for higher revenue (Ahmad, 2017). The fierce competition between financial institutions will bring excessive credit risk, but the regulatory body (Nepal Rastra Bank) basically discourages banks to do it. So, by generating non-income, banks can recover the loss of poor quality loans and advances. Even though, greater market powers (low competition) within the financial institutions have lower credit risk and earn more non-interest income from diversification. The greater market power might help the banks to select good customers, provides revenue growth opportunities from fee-based and commission-based new services products and enhances bargaining power to contract creation (Ovi, Peresa, & Colombage, 2014). A study conducted by Ovi, Peresa, & Colombage, in 2014 found a positive and statistically significant association between market power and non-interest income. The findings of this study can be explained by the fact that greater market power (low competition) in loans and deposit markets gives ground for growth opportunities in non-traditional income from fees and commission-based products. Income diversification has a positive impact on bank profitability in high-income and middle-income countries, but not in low-income countries. This result can be explained by the fact that margins in the traditional retail banking business are much higher for banks in low-income countries compared to banks in high-income countries; therefore income diversification in low-income countries is not beneficial because profit margin from interest income is higher than margins from fee, commission, and trading operations (Dietrich & Wanzenried, 2014).

2.4 Operating efficiency and bank profitability

Existing literature reveals two contrasting empirical pieces of evidence of capitalization on bank profitability. Operating efficiency deals with the production of outputs such as deposit and loan accounts and at a minimum cost per dollar (or account) (Gup & Kolari, 2012). Overhead cost is highly significant and positively related to bank profitability with regards to ROE, NIM, and PBT. This finding can be explained by the fact that large volume of operating expenses is derived from paying salaries and wages to staff, while higher levels of salaries and wages paid to staff significantly improve the staff productivity, while the resulting improvement in the bank profitability is much larger than the salaries and wages paid out by the bank (Tan, 2016). He found a positive relationship between operating efficiency and ROA, ROE, NIM, and PBT. Cost efficiency is found to be significantly and positively related to bank profitability, indicating that Chinese commercial banks with a higher level of cost efficiency have higher profitability (Fang, Lau, Lu, Tan & Zhang, 2019). Higher values of this variable indicate there is a higher volume of cost and further indicates that the bank does not control and manage the cost very well. On the one hand, higher volumes of operating costs without any doubt will have a negative impact on bank profitability. This argument is supported by the finding of Athanasoglou et.al. (2008) with regard to the Greek banking industry. On the other hand, this operating cost may possibly come from higher salaries and wages, and according to efficiency theory, the higher level of salary will significantly promote staff productivity, and further promote the bank's profitability (Tan, 2017).

Table 1: Description of the variables and their expected impact on bank profitability

Variables	Measurement	Expected effect
Profitability	ROA	
Capitalization	Capital adequacy ratio	-
Asset quality	Provision for the loan loss ratio	-
Operating efficiency	Cost to income ratio	-
Bank diversification	Non-interest income to gross income ratio	+

3. Variables Selection and Research Methods

3.1 Variable selection

3.1.1 Dependent variable: The main purpose of the study is to explain the impact of bank-specific variables on profitability. This study considers the mere one variable ROA as the dependent variable. This is measured by dividing net income by total assets of the bank. It is a widely used tool to measure the banks' performance.

3.1.1 The bank-specific variables: In this current study, four predictor variables are used. The first independent variable capital is measured by the capital adequacy ratio. A higher capital ratio indicates that the bank has lower risk. The second independent variable assets quality variable is measured by loan loss provision to the gross loan ratio. A higher ratio indicates poor asset quality. The third independent variable operating efficiency is measured by the total operating cost to the total operating revenue ratio. A higher ratio indicates that the bank is less efficient. Finally, the fourth independent variable diversification is measured by non-interest income to total gross income ratio. A high ratio indicates that the bank is highly diversified.

3.2 Research methods

Now 28 commercial banks are operating in Nepal. So, 28 commercial banks are considered as population. Among them, only eight commercial banks are taken as a sample by using non-probability convenience sampling. The study period was 2002/03 to 2016/17. This empirical study is based on time series panel data which is gathered through the review of quarterly and annual reports of the Nepal Rastra Bank and Ministry of Finance of Nepal. The collected time series data are analyzed using descriptive statistics, Pearson correlation coefficient, and multiple regression model. Therefore, this research employed a descriptive and explanatory research design. The average value, standard deviation, maximum, and minimum value are used to describe the characteristics of data from 2002/03 to 2016/17. The correlation matrix is used to examine the relationship between a response variable and predictor variables. The correlation matrix helps to identify the multicollinearity

problem. A common rule of thumb is that correlations among the independent variables between -0.7 to 0.7 do not cause difficulties (Lind, Marchal, & Wathen, 2006). Some statisticians assume that the correlation coefficient between predictor variables between -0.9 to 0.9 does not harm significantly. Thus, in this research, the researcher accepts those independent variables whose correlation coefficient lies between -0.9 to 0.9. Multicollinearity problem is detected based on VIF if VIF is greater than five (Titko, Skvarciany, & Jureviciene, 2015). Finally, the collected data are analyzed by using the Statistical Package for Social Sciences (SPSS).

Multiple regression models

Based on the review of the literature, to examine the relationship between the dependent variable and independent variables, the following multiple regression model has been tested.

$$ROA = a + \beta_1 (CAR) + \beta_2 (AQ) + \beta_3 (OE) + \beta_4 (D) + \epsilon_{ij}$$

Where ROA= Return on Assets, CAR= Capital Adequacy Ratio,

AQ = Assets Quality, OE = Operating efficiency, D= Diversification

4. Empirical Results and Discussions

Table 2 shows the descriptive statistics of dependent and independent variables. Table 3 shows the correlation matrix of response and predictor variables. This study mainly focuses on regression results. Table 3 shows the results of regression analysis. The regression coefficient of assets quality ($\beta = -1.64$, $p < .01$) indicates that a higher loan loss provision to the gross loan ratio result in the lower ROA to the banks. This result is similar to the expected results which are presented in table 1. This result is in line with the findings of Patria, Capraru & Itnatov (2015), however, it is in contrast with the findings of Trad, Trabelsi, & Goux (2017). The result of this regression coefficient can be explained by the fact that low-quality assets (higher loan loss to gross loan ratio) produce higher non-performing assets; increase loan loss provision for protection against default loss which eventually leads to lower the bank's profitability. Even though the loss from the relaxation of credit standard can be compensated by charging higher interest rates, the Nepalese commercial banks should supervise, and monitor the borrowers' position after granting the loan to the borrower in order to decrease non-performing assets.

Table 2: Descriptive statistics of response and predictors variables

Variables	N	Minimum	Maximum	Mean	SD
Asset Quality	96	.01	34.08	1.87	5.02
Diversification	96	-2.54	51.53	2.40	6.90
Capital Adequacy Ratio	96	-55.44	21.08	5.04	15.97
Operating Efficiency Ratio	96	0.40	2.79	1.92	3.19
ROA	96	-15.35	18.04	3.52	.917

Table 3: Correlation matrix of response and predictor variables

Variables	1	2	3	4	5
ROA	1	-.607* (.000)	.064 (.535)	.138 (.018)	-.689* (.000)
Asset Quality	-.607* (.000)	1	-.0039 (.708)	-.442* (.000)	.733* (.000)
Diversification	.064 (.535)	-.039 (.708)	1	.005 (.963)	.049 (.637)
Capital Adequacy Ratio	.138 (.018)	-.442* (.000)	.005 (.963)	1	-.493** (.000)
Operating Efficiency	-.689* (.000)	.732* (.000)	.049 (.637)	-.493* (.000)	1

Note. *Correlation is significant at the 0.01 level (2-tailed)

Table 4: Multiple regressions ROA on all predictor variables

Variables	Coefficient	t-statistics	P-value	VIF
Intercept	7.571	9.278	.000	

Asset Quality	-1.64**	-2.523	.013	2.224
Diversification	.04	1.259	0.211	1.015
Capital Adequacy Ratio	-.059*	-3.724	.000	1.346
Operating Efficiency	-7.001*	-6.144	.000	2.367
R	.755			
R ²	.570			
F	30.101*			
P-value	.000			

Note. *Correlation is significant at the 0.01 level (2-tailed), **Correlation is significant at the 0.05 level (2-tailed),

The regression coefficient of diversification ($\beta = -.04$, $p > .05$) indicates that there is an insignificant relationship between asset diversification and bank profitability. It reveals that assets diversify from traditional loan business to non-traditional business do not increase bank's profit significantly even though these two variables are positively correlated. This result is similar to the expected results which are presented in table 1. This result is in line with the findings of Tan (2016), Fang, Lau, Lu, Tan & Zhang (2019), however, it is in contrast with the findings of Ahamed (2018), Ovi, Peresa, & Colombage (2014), and Ditrich & Wanzenried (2014). This result can be explained by the fact that fee-based income and other service charges generated by the banks are too low which does not impact significantly on the bank's profitability. The regression coefficient of capital adequacy ($\beta = -.059$, $p < .01$) indicates that a higher capital adequacy ratio provides the lower ROA to the banks. This result is similar to the expected results which are presented in table 1. This result is in line with the findings of Patria, Capraru & Ilnatov (2015), and Bhattarai (2016); however, it is in contrast with the findings of Tan (2016), Trad, Trabelsi &, Goux (2017), and Ahemed (2017). The result of the study can be explained by the fact that a higher capital ratio reduces bank risk and reduces the benefit of leverage. The regression coefficient of operating efficiency (the cost to income ratio) reduces bank profitability. This result is similar to the expected results which are presented in table 1. This result is in line with the findings of Tan (2016), and Athanasoglou et.al. (2008); however, it is in contrast with the findings of Tan (2016). This result can be explained by the fact that a higher volume of operating costs reduces the bank's profitability because profit is the difference between total revenue and total cost and further it indicates that the banks are not able to control and manage cost properly.

5. Conclusion, Implication, and Limitations of the Study

Basically, bank-specific variables and microeconomic variables affect the banks' profitability. The empirical studies conducted by various researchers reveal the contradictory results that affect banks' performance. In this study, four independent variables are taken to gauge the impact of these variables on banks' profitability. This study employs ordinary least squares regression models to gauge the relationship between response and predictor variables. The model is statistically significant ($F = 30.101, < .01$) suggest that the independent variables such as assets quality, operating efficiency, and capital adequacy ratio significantly affect bank profitability. But one predictor variable named diversification does not affect banks' profitability significantly.

Nepal is a low-income country. The Nepalese banking sector is not well developed still now. This study certainly helps the banker and policymaker to take effective action in order to improve banks' profitability and stability. This study covers only four variables, therefore, further research needs to be done by including more variables including macroeconomic variables.

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