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BANK CAPITAL AND BANK PROFITABILITY OF VIETNAM COMMERCIAL BANKS

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ABSTRACT

The commercial banking system plays an important role in providing capital to businesses and other organizations, so bank capital receives great attention from many different subjects in the economy. This position is even more crucial for Vietnam, a developing country because the corporate bond market is relatively small in comparison to the size of the economy. As a result, commercial bank business efficiency is a problem that requires attention since it has a direct impact on the efficiency with which capital is provided to firms, as well as the market's stability. The research study concerning the effect of bank capital on bank profitability was conducted using data gathered from 22 Vietnam commercial banks from 2011 to 2020, using Pooled OLS, FEM, REM, and GMM methodologies. The results show that bank capital has a negative relationship with profitability. Bank profitability is also positively affected by bank size, credit risk, credit growth, and capital adequacy ratio. This study offers a new understanding of the relationship between bank capital, and bank profitability in Vietnam and proposed implications for Vietnam commercial banks' governance solutions, a country whose financial system depends mainly on banks, has transformed its capital management direction according to Basel 2 guidelines and is preparing for Basel 3 standards.

Keywords: Bank capital, bank profitability, commercial bank.

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1. INTRODUCTION

A commercial bank is a specific sort of business that deals with money and credit, so capital is one of the most important conditions for a bank to do business (Saleh & Afifa, 2020). Bank capital is also a main source of capital in the economy. A commercial bank's operation is fundamentally the same as that of a business. The primary goal of the corporation is to maximize shareholder wealth, so the issue of bank profitability is always a problem in achieving this goal because profitability is a key component in stock prices and influences bank investor decisions. The capital of a bank, among other things, has an impact on its profitability (Ha, 2020; Saleh & Afifa, 2020).

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The role of capital in the banking industry is like that of other for-profit businesses. The capital acts as a loss absorber boosts depositor confidence, it demonstrates how much risk the bank owners take and demonstrates how much the lowest-cost financing technique has been adopted (Anvarovich, 2022). Many scholars have shown that there is a relationship between capital and bank profitability (Saleh & Afifa, 2020; Goddard et al., 2004). According to Saleh and Afifa (2020), capital and earnings have a strong positive relationship. The capital ratio and profitability have an adverse correlation (Goddard et al., 2004). Inefficient European banks appear to have more capital (Saleh & Afifa, 2020). Two opposing arguments could be used to explain this. According to the expected bankruptcy costs theory, when exogenous factors increase expected bankruptcy costs, banks should increase their capital (Haugen et al., 2015). Furthermore, the signalling hypothesis suggests that banks may share information with the market about their prospects and ability to produce profits (Meyer, 1982). As a result, a signalling equilibrium may arise in which banks that expect to perform better in the future display a higher level of capital. High leverage, on the other hand, lowers the agency costs of outside equity and raises firm value by incentivizing managers to behave in the best interests of shareholders. As a result, a bank with an excessively high capital ratio is overly cautious, neglecting prospects for lucrative expansion, and so raising opportunity costs of capital (Saleh &Afifa, 2020).

The structure and administration of capital in a commercial bank is a critical issue and a top priority, not only for the benefit of the bank's customers but also for the sake of the banking industry's whole economy and the development of a country (Altunbas et al., 2007). This position is even more crucial for Vietnam, a developing country whose financial system depends mainly on commercial banks. In Vietnam, bank managers have given great emphasis to the bank's capital in their objectives, strategies, and implementation plans. Furthermore, capital is one of the aspects that contribute to the bank's operational stability (Le & Nguyen, 2020). The capital increase is important for banks when the scale of operations is expanding. While the equity of many banks increased disproportionately, putting pressure on the capital adequacy ratio, potential risks for the system. This fact poses a requirement for large and small banks to continue to increase their equity capital to better meet the requirements of capital adequacy ratio, ensure the capital adequacy ratio according to Basel II in Vietnam (Ha, 2020).

Many processes and rules are always provided by organizations such as the Banking Supervision Agency, the National Financial Supervisory Board, and the Vietnam Deposit Insurance to assess the financial capability of banks, with the emphasis on growing equity capital to assure the system's safety. However, the reality of capital management, as seen from the perspective of both macro-management agencies and corporate governance of commercial banks, has revealed that numerous shortcomings must be solved to ensure the profitable operation of the banking system while also ensuring safety and health (Le & Nguyen, 2020). The research aims to study the effect of bank capital on bank profitability in Vietnam's commercial banking sector, evaluate the influence of each element on the profitability of the bank system. Then, consider the implications for Vietnam commercial banks' governance solutions.

2. LITERATURE REVIEW

Bank profitability is defined as the difference between the profit generated by assets and the expense generated by liabilities (Yüksel et al., 2018). Return on assets (ROA) return on equity (ROE) ratio and net interest margin (NIM) are the most used indicators of bank profitability. Even though most researchers still use ROE as their primary performance measure, ROA may often provide a clearer understanding of a company's performance (Delen et al., 2013). According to Altunbas et al. (2007), a high ROE may indicate either high profitability or low equity capital. According to Goddardet et al. (2004), the use of ROE is more acceptable. The profitability of a bank is influenced by a variety of factors, including capital.

Many scholars around the world studied the impact of bank capital on bank profitability, and the research results have revealed a variety of impact trends (Goddard et al., 2004; Haugen et al., 2015; Saleh & Afifa, 2020). Some studies have discovered that bank capital is positively correlated to bank profitability (Goddard et al., 2004; Haugen et al., 2015). Ayaydin and Karakaya (2014) used a variety of bank-specific and country-specific variables as explanatory variables to examine the relationship between capital and profitability, and the research results have shown that capital and profitability have a positive and negative relationship. Lee and Hsieh (2013) found that investment banks have the lowest and positive capital effect on profitability, while commercial banks have the highest reverse capital impact on risk, using the GMM approach for dynamic panels using bank-level data for 42 Asian nations. Abbas et al. (2019) collected data from the banking industry in the United States and Asian developed economies to compare the impact of bank capital, bank liquidity, and credit risk on commercial bank profitability. The findings reveal that bank capital and credit risk have similar effects on profitability in Asian developed nations commercial banks as they do in the United States. Zafar et al. (2016) examined the impact of capital structure on Pakistani banks' execution. The data included 25 banks that are listed on the Karachi Stock Exchange (KSE). The study's findings confirmed a positive relationship between capital structure determinants and banking industry results. The study of Gadagbui and Amoah (2016) examined the relationship between bank equity capital and profitability by sampling fourteen banks out of the twenty-eight universal banks operating in Ghana over eleven years (from 2005 to 2015). The analysis used panel data methodology, GLS, and REM regression as an estimation technique. According to the findings, equity capital has a significant and positive relationship with Net Interest Margin and Return on Equity.

Some studies have discovered a negative relationship between these two variables because having more money means giving customers less credit (Buchory & Ekuitas, 2019). Using data from the US banking sector spanning several economic cycles from the late 1970s to the recent financial crisis of 2008-2010, (Osborne et al., 2012) investigated the effect of capital ratios on bank profitability. While most banks' average relationship is negative in most years, it becomes less negative or positive in distressed market situations, including the late 1980s savings and loan crisis and the recent global financial crisis of 2008-10. This is in line with the argument that increases in capital ratios are less costly for banks in such conditions than in other periods. Better capitalized banking sectors help to minimize default risk and contagion effects, but they can have a negative relationship with profitability due to higher overall funding costs for banks (Berger, 2013). Higher capital is supposed to be costly for banks, implying lower profitability. However, conventional corporate finance literature indicates that higher capital decreases the risk of bankruptcy, and hence the premium returns required by shareholders to compensate for the high cost of bankruptcy (Atta-

Mensah & Dib, 2003). Besides the impact of capital, the bank's profitability is also affected by many different factors.

The study aims to find out how 'capital adequacy,' 'leverage,' and the 'debt-equity ratio' affect the 'profitability' of Indian banks. For the analysis of India's top ten banks, data from the previous ten years was used. The findings found that capital adequacy has a positive relationship with bank profitability, the results are in sharp contrast to what the theory predicts. Liquidity and credit risk have also influenced profitability. The goal of the research is to determine the relationship between profitability and liquidity and focus on the banking industry, the results of Lee and Hsieh (2013) show that liquidity and profitability had a weak positive relationship.

The profitability is influenced by both environmental factors and the size of the bank (Meslier et al., 2014). It appears to be more important during times of recession, in lower and middle-income countries, and for larger banks (Coccorese & Girardone, 2021). Bank size was found to have a significant relationship with the profitability of Ghana's listed banks (Akomeah et al., 2020). The findings also show that different profitability variables have a large effect on profit persistence, and all risk variables are consistent from one year to the next (Lee & Hsieh, 2013). The importance of inflation and economic growth rates, particularly their relationship with bank performance, has been extensively explored in the literature. Inflation has a huge impact not just on company pricing but also on bank customers and financial resources.

3. METHODOLOGY

The data used in this study was taken from 22 commercial banks. Because these bank accounts accounted for 75% of the system's total assets, the data was indicative of the system. This data was gathered from commercial bank financial statements from 2011 to 2020.

The descriptive statistics of the data are the first step in the quantitative analysis process, the findings of the descriptive statistics were used to present an overview of the collected data set, including the number of observations and the average value. The correlation between pairs of variables in the research model, the correlation between an independent variable and the dependent variable, or the correlation between an independent variable and another independent variable was displayed using correlation analysis. The model estimation method chosen was Pooled, FEM, REM, because the study employs time-series data. The study next performed a VIF multi-collinearity test to determine the linear correlation phenomena of the model's independent variables. Furthermore, the variation of the error will render the generated estimates worthless, and regression coefficient tests will no longer be accurate. The regression coefficient test and R-squared could not be employed at that point because it was assumed that the independent variables in the research model are relevant. Because a change of variance affects the estimate's effectiveness, the White test must be used to test the variance hypothesis. The phenomenon of error correlation might occur, and the regression coefficients are no longer valid.

4. MODEL AND HYPOTHESES

To investigate the effect of bank capital on bank profitability, the following static relationship was established using panel data based on the considerations discussed above.

$$ROE_{it} = \propto_0 + \propto_1 CAR_{it}^2 + \propto_2 CAR_{it} + \propto_3 L1_{it}^2 + \propto_4 NPL_{it} + \propto_5 CAP_{it} + \propto_6 GDP_{it} + \propto_7 INFL_{it} + \propto_8 SIZE_{it} + \varepsilon_{it} \quad (1)$$

Here ROE_{it} is bank profitability of bank i, in year t; another explanatory variable that is bank capital (CAP). CAP is bank equity to the total asset. Term CAR is an index of capital adequacy ratio that accounts for both initial and overall capital stringency. It is calculated by considering the sources of funds used as capital and by taking into account various issues that emerge during the calculation of the capital-to-assets ratio. LQD is a proxy for the liquidity of the bank. NPL is a nonperforming loan to total loan, this ratio measures the credit risk of the banks. SIZE is an index of bank size, the ratio calculated by the natural Log of the total assets. Two other endogenous variables are economic growth rate (GDP) and inflation (INF). $\propto_0$, $\propto_1$, $\propto_2$… are the coefficients, ε_{it} represents the error term.

Table 1. Variables of the Study

Variables	Description	Expected effect	Authors
ROE	The ratio of average net profits to average bank equity		
SIZE	The natural Log of the total assets	+	Meslier et al. (2014) Akomeah and Agumeh (2020)
CAR	Capital adequacy ratio / Total asset	+	Berger (2013)
LQD	Liquidity asset / Total asset	+	Ahmad, Naveed, Ahmad, and Butt (2020)
NPL	Non-performing loan / Total loan	-	Fred Nelson (2020)
CAP	Bank equity / Total asset	+	Lee and Hsieh (2013) Zafar et al. (2016) Abbas et al. (2019)
GDP	Economic growth rate ($\frac{GDP_t - GDP_{t-1}}{GDP_{t-1}}$ x 100%)	+	Berger (2013)
INF	Inflation ($\frac{CPI_t - CPI_{t-1}}{CPI_{t-1}}$ x 100%)	-	Berger (2013)

5. EMPIRICAL RESULTS

Table 2 shows the research's descriptive statistics, the mean, maximum, minimum, and standard deviation are used to describe the dispersion between observations in the sample. Values of variables are unevenly distributed, through mean and standard deviation. The data is unbalanced.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	212	0.110	0.097	0.003	0.82
INF	216	5.628	4.671	0.878	1.675
SIZE	214	1.926	1.091	1.531	2.139
CAP	213	0.092	0.088	0.026	0.949
LQD	190	0.161	0.086	0.029	0.531
GDP	216	6.441	0.708	5.247	7.6

Source: Computed by Stata software.

The correlation coefficient matrix in table 3 shows that there is no significant autocorrelation because the serial correlation coefficients are small (the highest is 0.3565), the comparison standard is 0.8 (Farrar et al., 1967).

Table 3. Correlation Coefficient Matrix

	ROE	SIZE	CAP	LQD	GDP	INF
ROE	1					
SIZE	0.270	1				
CAP	-0.166	-0.076	1			
LQD	-0.011	-0.199	-0.012	1		
GDP	0.208	0.174	0.106	-0.162	1	
INF	0.123	-0.084	-0.025	0.356	-0.382	1

Source: Computed by Stata software.

Detecting multicollinearity with VIF coefficient, the result in table 4. shows that the VIF of all independent variables is less than 3, so multicollinearity does not exist in a regression model (Hair et al., 2017).

Table 4. Results of VIF

VARIABLE	VIF	1/VIF
INF	1.31	0.763
GDP	1.22	0.821
LQD	1.19	0.843
SIZE	1.08	0.928
CAP	1.02	0.978
MEAN VIF	1.16	

Source: Computed by Stata software.

The regression results in table 5 show the impact of capital on the bank's profitability using four different methodologies including Pooled OLS, FEM, and REM. The White test shows that Prob > chi2 = 0.0010 (less than 1 percent), so the regression model has a variable variance. To improve estimation efficiency and test the internal consistency of the model, the SGMM test is employed. The findings reveal that capital has a negative influence on the profitability of Vietnam commercial banks using the FEM, REM, and SGMM models. Bank capital has a negative influence on bank profitability with a statistical significance of 1%. The result of this study is not consistent with the research hypothesis but confirms the research of (Buchory & Ekuitas, 2019).

In the SGMM model, the capital adequacy ratio has a positive effect on profitability. The result of this study is consistent with the research hypothesis and similar to the research results of (Berger, 2013).

Table 5. Estimation Results

VARIABLE	Pooled OLS	FEM	REM	SGMM
SIZE	0.020***	0.034***	0.064***	0.038***
	[3.26]	[3.07]	[3.21]	[4.10]
CAP	-0.125	-0.147**	-0.158**	-0.178***
	[-1.43]	[-2.01]	[-2.14]	[-7.68]
LQD	0.0612	0.072	0.087	-0.069
	[0.86]	[1.01]	[1.17]	[-1.12]
GDP	0.025***	0.019**	0.005	0.035***
	[2.81]	[2.25]	[0.47]	[7.37]
INF	-0.078	-0.032	-0.017	0.033
	[-0.68]	[-0.34]	[-0.18]	[1.11]
CAR				0.006***
				[5.89]
NPL				0.450*
				[1.72]
_cons	-0.432***	-0.668***	-1.159***	-0.878***
	[-3.25]	[-3.42]	[-3.46]	[-4.96]
N	185	185	185	177
R-sq	0.145		0.196	

Source: Computed by Stata software.
Note: The *p*-values are shown in brackets, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.0$.

Furthermore, the effects of bank size, credit risk, and economic growth rate on bank profitability are found. With a significance level of 1%, the size of the bank has a positive effect. The findings do not consistent with the research hypothesis and confirm the research of Akomeah et al. (2020). Credit risk has a positive effect on bank profitability with a statistical significance of 10%. The findings do not consistent with the research hypothesis but confirm the research of Saleh and Afifa (2020). The economic growth rate has a positive effect on bank profitability with a statistical significance of 1%. The findings do not consistent with the research hypothesis and confirm the research of Berger (2013).

6. CONCLUSION AND POLICY IMPLICATIONS

This study and its findings are relevant to the impact of bank capital on bank profitability in bank management research. To date, there exists an unfortunate lack of published research similar to this study's focus and design. Research results show that bank capital has a negative relationship with profitability. Bank profitability is also positively affected by bank size, credit risk, credit growth, and capital adequacy ratio. The following are the consequences of the research findings on the proposed management solutions:

Increase the banking industry's capital efficiency to assure a capital increase also increasing the bank's profitability. The effective capital business reflects the efficiency of capital use. Because lending is a bank's principal business, recovering loans from customers is one of the most important

factors in running a successful business. Customers who always repay their debts to the bank on time demonstrate that the bank has used their loans successfully and can easily transfer capital. One of the principles in credit activities is that loans, both principal and interest, must be recovered on time as agreed. As a result, banks must use more effective credit risk management strategies. Effective credit management needs even more special attention in the current period when the Covid-19 pandemic has had a lot of negative impacts on the Vietnam economy. The evolution of the pandemic has not only made it difficult for many banks to collect debts, sell assets to secure loans, and recover old non-performing loans, but many commercial banks are also generating new non-performing loans. Customers cannot sell goods, have no revenue to pay the due debt.

CAR is a key metric for assessing the safety of a bank's operations, developed by leading banking specialists under the supervision of the Basel Committee. The capital adequacy ratio has a positive impact on the bank's profitability, so this ratio should be maintained at an acceptable standard. Banks must enhance capital to ensure that the CAR coefficient is calculated according to the Basel II roadmap. In the context of a lending growth plan, however, a lack of capital creates an enormous risk. Increasing capital for state-owned banks requires attracting greater investment capital, particularly from international strategic investors. However, changes such as enhancing the quality and transparency of books, as well as macro-security measures to reduce non-performing loans and release collateral, are urgently needed. Managers of banks should not consider seriously adopting a policy of boosting profits by investing in riskier asset portfolios, so lowering the bank's level of safety. The adoption of the above management strategies, however, is contingent on the current market scenario. If the market is in a boom, banks might increase their risk appetite to seek profit while lowering their capital adequacy.

Maintaining the bank's size at an appropriate level, the increase in size through increasing credit activities should be controlled. When it decided to expand credit, commercial banks, particularly small-scale commercial banks, must focus on balancing mobilized capital, as they often have much more difficulty than large-scale commercial banks in gaining wholesale capital as well as mobilizing capital in the interbank market and the international capital market. At the same time, the government does not provide as much support to these banks as it is to large-scale commercial banks in the case of serious losses, according to the "Too big to fail" theory.

7. LIMITATIONS

The limitation of the study is that there is no comparison with the level of impact of the banking system of other countries in the region. Besides, the study also has many other limitations such as not comparing factors related to bank characteristics, number of years of operation, etc.

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