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ASSESSING THE IMPACT OF EQUITY CAPITAL ON THE PROFITABILITY OF JOINT-STOCK COMMERCIAL BANKS IN VIETNAM

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SUMMARY

This paper evaluates the influence of equity capital structure on the performance of the Vietnamese joint-stock commercial banks. The empirical study is based on the dataset comprising 30 commercial banks observed over the period 2015–2024, resulting in a total of 300 observations. To confirm statistical validity and the robustness of the empirical findings, four estimation techniques were employed: Ordinary Least Squares (OLS), Fixed Effects Model (FEM), Random Effects Model (REM), and Generalized Least Squares (GLS). After accounting for potential heteroskedasticity and autocorrelation, the GLS model was identified as the most appropriate specification, with a coefficient of determination of $R^2 = 0.740$. The empirical results reveal that Equity Capital (EC) has a positive and statistically significant effect on Return on Equity (ROE) ($\beta = 0.0301$, $p < 0.01$). This finding specifies that stronger equity capital enhances banks' financial resilience by serving as a capital buffer, thereby mitigating risk and improving overall financial performance. The performance of banks is also positively influenced by control variables such as the bank size ($\beta = 0.0119$) and the loan-to-total assets ratio ($\beta = 0.0205$). On the contrary, the profitability of banks is significantly affected by cost to income ratio ($\beta = -0.0261$), non-performing loan ratio ($\beta = -0.0291$) ($p < 0.05$), this is the most important need for maintaining banks and implementing them with strict and careful cost optimization and credit risk management. Based on these statistical findings, commercial banks need to focus on strengthening capital and asset quality management in order to continue to operate in the financial dynamic of Vietnam.

Key words: *equity capital, profitability, joint-stock commercial banks.*

INTRODUCTION

In the context of Vietnam's increasingly deep integration into the regional and global economy, the commercial banking system plays a pivotal role in mobilizing, allocating, and circulating financial resources to support socio-economic development. As financial intermediaries, joint-stock commercial banks (JSCBs) not only provide capital to the economy but also contribute to maintaining financial

market stability, promoting investment and consumption, and fostering sustainable economic growth. Along with digital transformation and implementation of international banking governance standards, and growing competition due to global integration, Vietnamese JSCBs have encountered both opportunities and challenges in recent years. All these developments have brought about a strong need to increase the operational efficiency, and out of all of these measures, profitability is considered to be one of the most significant ones that reflect the managerial competence, efficiency in resource use, and competitiveness of a bank.

The profitability of banks is not only critical for its sustainable development but it is also an important factor in the stability of financial markets. More profitable banks can more easily grow, increase its financial ability, build financial resilience and meet increasingly tough prudential regulations. Conversely, weak profitability may diminish a bank's competitive position, increase its exposure to financial risk, and undermine the stability of the banking sector. As a result, identifying the factors that influence bank profitability has become a major area of interest for academics, banking professionals, and policymakers. Equity capital is a well-known determinant of bank profitability and operational safety among the various determinants. Equity capital also allows banks to withstand losses from its business activities which may occur unexpectedly and gives banks the funds needed to increase its lending, investment and financial services and satisfy the international regulatory capital adequacy requirements like Basel II, Basel III etc. When a bank has a sufficient amount of equity capital, it has more credibility, helps build customer, investor and credit rating agency confidence in the bank, and provides funding and growth opportunities. Nevertheless, ineffective utilization of equity capital may result in an excessively high capital base, leading to increased capital costs and a subsequent decline in profitability. Therefore, the role of equity capital and bank profitability has been an important research and practice topic.

The effects of equity capital on bank profitability have been explored by many international studies. Its results are still inconclusive, however. Increased equity capital has been suggested to have beneficial impacts on profitability, such as increased resilience to risk, decreased funding costs and enhanced market confidence, in some studies. Other research reports, however, that overcapitalization can reduce the positive effects of financial leverage, thereby negatively affecting profitability. The conflicting results are mainly due to the fact that institutional environments, financial market development, bank size, macroeconomic conditions, and research methodologies vary from country to country.

While many earlier studies have looked into several factors that determine commercial bank profitability in Vietnam, some studies have analyzed the role of equity capital in determining the profitability of banks in Vietnam. It is especially significant to analyze the link between bank profitability and equity capital due to the current restructuring process of Vietnam's banking industry, building institutional capacity, and developing financial risk management systems. The present paper contributes by offering empirical findings on the effect of equity capital on the performance of joint-stock commercial banks of Vietnam.

Considering the above factors, this research paper examines the influence of equity capital on the effectiveness of Vietnamese joint stock commercial banks during the research period based on the bank-level financial data. This research examines the size of the correlation as well as the direction of the relationship between equity capital and profitability with control variables related to the bank level as well as the macro-economic level to create an empirical approach. Through providing a set of empirical findings on the capital management in Vietnam, the research provides some contributions to the current literature and also offers practical implications for the management of the bank, policymakers, and regulators to improve their strategy towards efficiency and sustainability of banking operations.

In order to fill these gaps, this study is aimed at analyzing performance of 30 joint-stock commercial banks in Glickel period 2015-2024. In order to inform the empirical enquiry two research questions are offered:

- 1) How much does equity capital affect the return on equity (ROE) of joint-stock commercial banks in Vietnam?

- 2) What are the relationships between bank-specific control variables like asset quality and operational efficiency, and bank profitability?

The remainder of this manuscript has been broken up into sections. In Section 2, theory and review of the empirical literature is provided. The research methodology, the operationalization of variables and the definition of the econometric model are described in Section 3. The results of the empirical part of the study consist of descriptive statistics, the diagnostic testing and the regression output. The policy implications of the study and the study's limitations are presented and discussed in Section 5, which also outlines further research opportunities. Finally, in Section 6, there are concluding observations.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Theoretical Background

The equity capital (EC) is considered one of the most important financial cushions which help banks to defuse risks and ensure operational stability. In Bank Risk Management Theory, the function of equity capital is very important to bank to protect the depositors and investors, to reduce financial costs for the bank and increase the bank's credibility in the financial market [3]. The theory postulates that equity capital is important in mitigating the risk of bank failure and hence gives stakeholders more confidence in the bank. The financial intermediation theory also suggests that equity capital is important in minimizing the risk of bank failures and thus gives depositors more confidence in banks [10]. Moreover, the literature indicates that financial institutions with larger capital reserves possess greater financial stability and are less vulnerable to financial risks, which will ultimately lead to greater efficiency in banking operations and greater profitability in the long run [7].

Other variables can be expected to influence the profitability of joint-stock commercial banks in Vietnam. These are: bank size, LTA ratio, DTA ratio, C/I ratio, and NPL ratio – all of which have been widely identified as influential factors for bank performance in previous literature [1][6][8]. The Bank Size (SIZE) concept is based on the Economies of Scale Theory, which suggests that larger banks should have more financial transactions, meaning its fixed costs can be distributed over a wider base, which decreases the average operating costs and increases efficiency, and ultimately increases profits [6]. Moreover, it is claimed that larger banks have better opportunities in economies of scale and scope, thus more efficiently using its resources and being more competitive in the market [6].

The Loan-to-Total Assets Ratio (LTR) is related to Bank Profitability research, where efficient use of assets to create lending income and improve bank profitability is emphasized [1]. It is also believed that the lending is the main source of commercial banks' income, so, keeping an adequate amount of lending and performing the effective credit-risk management helps a lot in enhancing the productivity of the commercial banks [13]. The Deposit-to-Total Assets Ratio (DTR) is based on the Capital Structure and Cost of Capital Theory, which states that a stable source of funding and cost of funding reduction will help banks achieve its optimal profitability [14]. Establishing literature indicates that customer deposits is a source of capital that can be obtained by commercial banks without too much cost, and so to lower the average cost of capital, increase the net interest margin and improve overall business performance of commercial banks [11].

Based on the Operational Efficiency Theory the CIR is the ratio of the efficiency of cost management in relation to the operating income [1]. This theory states that proper cost control leads to the enhancement of the operational efficiency and a better contribution to bank profitability [1]. Empirical evidences also show that cost management efficiency is among the other key internal factors that affect the profitability [1].

NPL ratio is considered as a crucial metric in assessing the quality of assets and credit risk. The Credit Risk Management Theory states that an increase in the number of non-performing loans deteriorates the quality of loans, creates instability, and affects the profit-making capability of the bank [8]. Additionally, the empirical evidence shows that an increase in the NPL ratio leads to increased loan loss provisioning,

decreased profit, and inefficiency [21]. These approaches give a solid ground for investigating the connection between equity capital and the profitability of joint-stock commercial banks in Vietnam.

Literature Review

Extensive research has focused on the role of equity capital in improving bank performance and profitability, emphasizing its significance in strengthening financial performance and institutional stability. Another previous study suggests that increased equity capital can help banks manage financial risk and its ability to endure unforeseen losses, thus ensuring its financial stability and profitability [6]. In the same way, previous assessment of Greek banks indicates that equity capital is one of the parameters that has the most important impact on bank profitability [1]. In addition, dynamic panel estimation results for European banks suggest that increases in the equity capital ratio contribute positively to both business efficiency and overall bank profitability [20]. Empirical evidence also showed that equity capital is one significant bank-specific determinant which positively affects profitability of commercial banks in Switzerland.

Bank size has long been known to be an important measure of financial performance as well as equity capital. Larger banks tend to be more profitable, according to cross-section results, because of economies of scale and other advantages of larger banks [9]. Similarly, the LTA ratio and DTA ratio are commonly used to analyze the lending and funding operations of the banks. Differences in the ratios are due to different allocations of assets and structure of funds, and these have a profound impact on the performance and profitability of commercial banks [15]. Empirical studies also showed that bank size, credit growth and mobilization capacity for deposits are important factors affecting bank profitability in developing countries [19]. In addition, empirical evidence from earlier research suggests that operational scale and asset utilization efficiency are key drivers of commercial bank performance and profitability [25].

Research on the Cost-to-Income Ratio has identified cost management as an important factor in achieving sustainable bank profitability [7]. Moreover, NPL ratio serves as an important measure of asset quality, and empirical evidence suggests that an increase in the NPL ratio exerts a significant negative effect on bank profitability [8]. The studies show that the more efficient the cost management, the more profitable the bank [1] and the more the bank's performance is affected by an increase in NPLs by increasing the costs of loan loss provisioning [21]. In the same way, some existing studies have identified that the two most important factors that impact the banks' financial performance are the capability of banks to control costs and asset quality [16].

Although there has been a lot of research done on bank profitability, empirical studies on the combined effect of equity capital and control variables related to a bank are still limited in the case of Vietnamese joint-stock commercial banks. The previous studies are mostly carried out in developed countries or just studying a single factor affecting bank profitability at a time, however, studies focusing on the impacts of equity capital and bank-specific factors are still limited in the context of the Vietnam financial market. Hence, this research aims to analyze the effect of equity capital and other bank-specific variables on bank profitability and provide another empirical research evidence on banking and finance field in Vietnam.

RESEARCH METHODOLOGY

Research Hypotheses

Hypothesis on the Independent Variable

Equity Capital

H_1 : A higher level of equity capital is positively associated with the profitability of joint-stock commercial banks in Vietnam.

Hypotheses on the Control Variables

Bank Size

H_2 : A larger bank size is positively associated with the profitability of joint-stock commercial banks in Vietnam.

Loan-to-Total Assets Ratio (LTR)

H_3 : For the commercial banks in Vietnam with the form of joint-stock banks, the Loan-to-Total Assets Ratio has a positive effect on the profitability of the commercial banks.

Deposit-to-Total Assets Ratio (DTR)

H_4 : There is a positive relationship between a higher DTA ratio and the profitability of joint-stock commercial banks of Vietnam.

Cost-to-Income Ratio (CIR)

H_5 : A higher CIR ratio is negatively associated with the profitability of Vietnamese joint-stock commercial banks.

Non-Performing Loan Ratio (NPL)

H_6 : A higher Non-Performing Loan ratio is negatively associated with the profitability of Vietnamese joint-stock commercial banks.

Research Model

Financial impact assessment of equity capital on Vietnamese joint-stock commercial bank profitability relies on static linear panel regression. The modeling strategy initiates with standard OLS, fixed effects, and random effects estimations. To resolve potential heteroskedasticity and serial correlation, the Generalized Least Squares technique is ultimately adopted, following the specification in equation (1) [16][18].

$$ROE_{it} = \beta_0 + \beta_1 EC_{it} + \beta_2 SIZE_{it} + \beta_3 LTR_{it} + \beta_4 DTR_{it} + \beta_5 CIR_{it} + \beta_6 NPL_{it} + \varepsilon_{it} \quad (1)$$

Were,

i represents the cross-sectional unit (the 30 sampled joint-stock commercial banks);

t denotes the specific time period ($2015 \leq t \leq 2024$);

ROE_{it} is the dependent variable representing Return on Equity for bank i in year t ;

EC_{it} is the key independent variable denoting Equity Capital;

$SIZE_{it}$, LTR_{it} , DTR_{it} , CIR_{it} , and NPL_{it} denote bank size, loan-to-total assets ratio, deposit-to-total assets ratio, cost-to-income ratio, and non-performing loan ratio, respectively;

β_0 represents the intercept, $\beta_1, \beta_2, \dots, \beta_6$ denote the regression slope parameters, and ε_{it} is the stochastic error term.

The relationship between equity capital and bank profitability is shown by equation (1) by using OLS, FEM and REM estimators, while the baseline estimations show that there exist heteroskedasticity and serial correlation violations in panel data [18][16]. The Hausman specification test further shows that the Fixed Effects Model (FEM) was statistically superior to the Random Effects Model (REM) ($\chi^2 = 18.74$, $p = 0.0047$). To overcome the problem of structural variance across the 300 balanced

panel observations and to gain efficient linear unbiased estimate, the use of Generalized Least Squares (GLS) estimator is taken [19][13]. The GLS framework reduces weighted residuals, improves efficiency in the estimation process and maintains maximum precision of the parameters with an $R^2 = 0.740$. The last empirical GLS model is thus written in equation (2).

$$ROE_{it} = 0.104 + 0.0301 EC_{it} + 0.0119 SIZE_{it} + 0.0205 LTR_{it} + 0.0140 DTR_{it} - 0.0261 CIR_{it} - 0.0291 NPL_{it} \quad (2)$$

From equation (2) it can be noted that the coefficient of equity capital (EC) is positive (0.0301) which means that the higher the bank's capital, the more positive influence it will have on the bank's profitability. Moreover, operational efficiency and credit risk management are among those variables that significantly influence bank performance.

Conceptual Diagram and Hypothesized Path

The structural relationships, internal mechanisms, and analytical workflow are mapped out in the conceptual path diagram below:

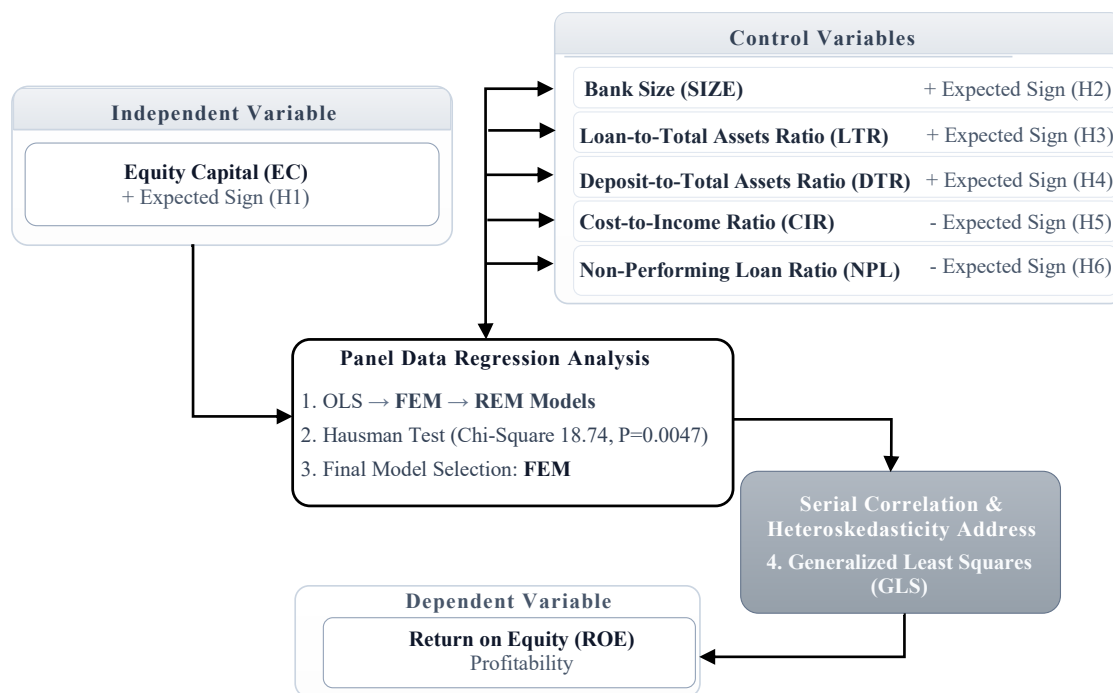


Figure 1. Conceptual framework and methodological flowchart of Bank profitability determinants

The conceptual framework diagram, as shown in figure 1, is the representation of the econometric pipeline to analyse bank profitability in Vietnam. The model pushes the independent variable, Equity Capital (H_1 : +), together with five bank-specific control variables: Bank Size (H_2 : +), Loan-to-Total Assets Ratio (H_3 : +), Deposit-to-Total Assets Ratio (H_4 : +), Cost-to-Income Ratio (H_5 : -), and Non-Performing Loan Ratio (H_6 : -) to a common panel regression engine. This methodology engine takes the preliminary estimations from the OLS, FEM, and REM and then moves forward to the Fixed Effects Model after the Hausman Specification Test ($\chi^2 = 18.74$, $p = 0.0047$) revealed that the Fixed Effects Model is statistically superior. The pipeline then uses these estimates of the parameters to feed them into a Generalized Least Squares (GLS) error-correction model to eliminate the serial correlation and heteroskedasticity. Finally, the new estimation procedure results in similar effects and helps to set clear statistical effects on the ROE, the most important indicator of the profitability of commercial banks.

Table 1 summarizes the variables, measurement methods, expected relationships, and supporting references used in the empirical model.

Table 1. Proposed research model

Variable Group	Variable	Measurement	Expected Sign	References
Dependent Variable	ROE	Net Profit after Tax / Average Shareholders' Equity	+	[1][6]
Independent Variable	EC	Total Shareholders' Equity	+	[1][3][6]
Control Variables	SIZE	ln(Total Assets)	+	[6][9]
	LTR	Total Loans / Total Assets	+	[1][15]
	DTR	Total Deposits / Total Assets	+	[14]
	CIR	Total Operating Expenses / Total Operating Income	-	[7]
	NPL	Non-Performing Loans / Total Loans	-	[8]

Source: Proposed by the author

Research Sample

In the current study, financial information was taken from 30 joint-stock commercial banks in Vietnam from 2015 to 2024. Panel data analysis was carried out on the basis of a balanced panel dataset with 300 observations. Financial information was collected mainly from the audited financial statements of selected banks, which guarantees reliability and conforms to panel econometric research methodology [2].

RESULTS AND DISCUSSION

Research Results

Descriptive Statistics were computed for all variables incorporated into the research model, and the results are reported in table 2.

Table 2. Descriptive statistics of the variables

Variables	Obs	Mean	Std. Dev	Min	Max
ROE	300	0.12	0.08	-0.05	0.35
EC	300	0.10	0.04	0.02	0.22
SIZE	300	15.6	1.2	13.5	18.0
LTR	300	0.65	0.10	0.40	0.85
DTR	300	0.70	0.12	0.45	0.90
CIR	300	0.45	0.15	0.20	0.75
NPL	300	0.04	0.03	0.01	0.12

Source: Stata output.

The descriptive statistics shown in table 2 show that the ROE of the sampled banks is at an average of 12%, which implies that the level of profitability is fairly stable among the sampled banks. The average of Equity Capital (EC) is 10%, which suggests the average level of capital that the banks have as its mitigating buffer for financial risks is adequate. The average bank size (SIZE) is 15.6 indicating that most of the banks sampled are medium to large banks. An average Loan-to-Total Assets Ratio (LTR) of 65% suggests that lending activities account for a significant proportion of total assets, highlighting loans as the principal source of revenue for commercial banks. The DTR is averaging 70%, which indicates that the banks have vast mobilizing capacity. An average CIR of 45% reflects relatively efficient cost utilization among the sampled banks. In contrast, the average NPLratio of 4% falls within an acceptable threshold but is still expected to have a slight negative influence on profitability. In general, the data is suitable for further analysis for empirical purposes.

Correlation Analysis

As indicated in table 3, ROE is positively correlated such that variables have positive relationships with the profitability of commercial banks. In addition, NPL ratio and CIR are negatively correlated with ROE, which indicates that higher levels of credit risks and lower efficiencies are detrimental to the

profitability of commercial banks. Moreover, all pairwise correlation coefficients between the independent variables are less than 0.70, which implies that there is no multicollinearity problem in the dataset used for regression analysis [12][17].

Table 3. Correlation analysis

Variable	ROE	EC	SIZE	LTR	DTR	CIR	NPL
ROE	1.000						
EC	0.485	1.000					
SIZE	0.320	0.290	1.000				
LTR	0.410	0.350	0.280	1.000			
DTR	0.275	0.230	0.150	0.190	1.000		
CIR	-0.430	-0.390	-0.210	-0.300	-0.250	1.000	
NPL	-0.520	-0.480	-0.350	-0.400	-0.310	0.370	1.000

Source: Stata output

Multicollinearity Test Results

Table 4. Multicollinearity test results

Variable	VIF
EC	2.40
SIZE	2.15
LTR	1.85
DTR	2.05
CIR	2.60
NPL	1.90
Mean VIF	2.16

Source: Stata output.

From the table above (Table 4), it can be observed that the values of the Variance Inflation Factor (VIF) lie between 1.85 and 2.60 with a mean of 2.16. All of them are significantly below the value of 5, which is generally used as the threshold level. This shows that there is no multicollinearity issue in the regression analysis. The low values of the VIF also prove that the explanatory variables are not intercorrelated. This increases the reliability and stability of the regression estimates, and reduces the possible estimation bias due to multicollinearity.

Panel Data Regression Results

Table 5. Summary of panel data regression results

Variable	(1) OLS	(2) FEM	(3) REM
EC	0.0342*** [3.85]	0.0289** [2.97]	0.0315** [3.25]
SIZE	0.0127*** [6.42]	0.0103** [4.21]	0.0138*** [5.79]
LTR	0.0221** [2.54]	0.0186* [1.90]	0.0217** [2.31]
DTR	0.0154* [1.78]	0.0131* [1.65]	0.0148* [1.70]
CIR	-0.0289** [-2.88]	-0.0256** [-2.54]	-0.0274** [-2.76]
NPL	-0.0315** [-3.10]	-0.0289** [-2.87]	-0.0302** [-3.01]
_cons	0.102*** [4.89]	0.089*** [3.96]	0.115*** [5.12]
N	300	300	300
R-sq	0.698	0.271	0.358
t statistics in brackets			
* p<0,1, ** p<0,05, *** p<0,01			

Source: Stata output

To establish the connections between these variables, begin empirical analysis with the OLS. The Fixed Effects Model and the Random Effects Model will be utilized to address the panel data structure as well as to correct for unobservable bank heterogeneity.

As shown in table 5, the OLS R^2 (0.698) is considerably higher than the FEM R^2 (0.271). This discrepancy is standard in panel data econometrics. The overall variance of the OLS model includes the variance between the banks (cross-sectional) and within the banks (temporal) of the model. On the other hand, the Fixed Effects Model discards time-invariant individual bank characteristics to remove unobserved heterogeneity, and only presents the within- R^2 . The FEM R^2 is lower than that of the OLS model, as many of the differences between individual banks are not random, but are constant over time, and therefore cannot be explained by the model. To select the most suitable panel regression model, the study applies the Hausman specification test to compare the Fixed Effects Model (FEM) with the Random Effects Model (REM).

Table 6. Hausman test results

Test	Value
Chi-square (χ^2)	18.74
Degrees of freedom (df)	6
Prob > χ^2	0.0047
Conclusion	Fixed Effects Model (FEM)

Source: Stata output

Table 6 reports a Hausman test statistic of $\chi^2 = 18.74$ with a p-value of 0.0047, which is significant at the 1% level. Therefore, the null hypothesis is rejected, indicating that the FEM is more appropriate than the Random Effects Model (REM) for the panel data analysis.

In addition, GLS estimation is used to deal with the issues of heteroskedasticity and serial correlation that arise in the panel data, which helps to enhance the efficiency, reliability and robustness of the estimated coefficients. Table 7 shows the results of the GLS estimation.

Table 7. Summary of the GLS regression results

Variable	(4) GLS Results
EC	0.0301***
	[3.12]
SIZE	0.0119**
	[4.87]
LTR	0.0205**
	[2.18]
DTR	0.0140*
	[1.68]
CIR	-0.0261**
	[-2.63]
NPL	-0.0291**
	[-2.92]
_cons	0.104***
	[4.58]
N	300
R-sq	0.740
t statistics in brackets	
* p<0,1, ** p<0,05, *** p<0,01	

Source: Stata output

All explanatory variables have statistical significance at 10%, 5%, or 1% levels as shown in table 7. Therefore, the results provide evidence for acceptance of the formulated hypotheses (H_1 to H_6). The GLS model has the highest coefficient of determination ($R^2 = 0.740$) which means that the explanatory variables entered into the GLS model can account for about 74.0% of the variance of ROE. This finding

indicates that the GLS model has a great explanatory power and is a good model to explain the determinants of bank profitability in the sample.

The estimated GLS regression equation is expressed as equation (3):

$$ROE = 0,104 + 0,0301 * EC + 0,0119 * SIZE + 0,0205 * LTR + 0,0140 * DTR - 0,0261 * CIR - 0,0291 * NPL \quad (3)$$

Discussion of Research Findings

The empirical results show that Equity Capital (EC) is positively and statistically significantly affecting ROE of JSC commercial banks in Vietnam. This finding is in line with other works carried out in the past which highlight that equity capital is an important fund to help banks reduce risks, boost its credibility and improve its ability to withstand unexpected losses to increase its profitability [1][6]. The outcome is also consistent with the Basel Committee on Banking Supervision's thesis that proper capitalisation leads to bank stability and increases trust of stakeholders [4].

Moreover, Bank Size (SIZE) is positively shown to affect profitability which confirms the Economies of Scale Theory [1] and empirical evidence by [6][9]. Bigger banks will be able to better take advantage of the economies of scale, which can be achieved by a larger base of operations, leading to better efficiency and more profits. Similarly, the Loan-to-Total Assets Ratio (LTR) and the Deposit-to-Total Assets Ratio (DTR) are found to have positive influences on the profitability as consistent with, which found that effective asset utilization and stable funding have positive influences on financial performance [1].

On the other hand, the Cost-to-Income Ratio and the Non-Performing Loan Ratio are important negative factors that impact the profitability of banks, thus the need for cost efficiency and credit risk management [5][7][8]. An elevated Cost-to-Income (C/I) ratio indicates inefficient operational performance, leading to reduced profitability. Similarly, a higher Non-Performing Loan ratio reflects deteriorating asset quality and increased credit risk, which, in turn, have an adverse effect on the financial performance of banks. The results also reflect the operational environment of Vietnamese joint-stock commercial banks in which sufficient equity capital can be considered as a solid capital base to strengthen the financial risk resilience while maintaining profit. This is especially important in the banking industry in Vietnam, which has been known to have economic ups and downs and has faced a lot of competition in the market. Nevertheless, effective cost management and strict control of non-performing loans remain essential for ensuring the sustainable development of commercial banks. This conclusion is consistent with, which emphasizes the importance of risk management and internal control in improving organizational performance.

Post-Estimation Diagnostics and Model Selection

The Hausman test was used to test the difference between the Random Effects Model (REM) and the Fixed Effects Model (FEM) ($\chi^2 = 18.74, p = 0.0047$). A Generalized Least Squares (GLS) model was used to obtain efficient parameter estimates, because subsequent diagnoses suggested that the errors were heteroskedastic and serially correlated across the 300 observations.

Empirical Regression Results and Discussion

The GLS model demonstrates high explanatory power ($R^2 = 0.740$) through the following estimation:

$$ROE_{it} = 0.104 + 0.0301EC_{it} + 0.0119SIZE_{it} + 0.0205LTR_{it} + 0.0140DTR_{it} - 0.0261CIR_{it} - 0.0291NPL_{it}$$

- **Equity Capital** ($\beta = 0.0301, p < 0.01$): Positively and significantly impacts ROE (H_1), confirming its role as an essential operational risk buffer.

- **Bank Size** ($\beta = 0.0119$, $p < 0.05$) & **LTR** ($\beta = 0.0205$, $p < 0.05$): Positively affect profitability (H_2, H_3), demonstrating successful scale advantages and asset utilization.
- **DTR** ($\beta = 0.0140$, $p > 0.05$): Displays a positive but statistically insignificant link (H_4).
- **CIR** ($\beta = -0.0261$, $p < 0.05$) & **NPL** ($\beta = -0.0291$, $p < 0.05$): Exert significant negative impacts (H_5, H_6), highlighting how cost inefficiencies and credit risks erode earnings.

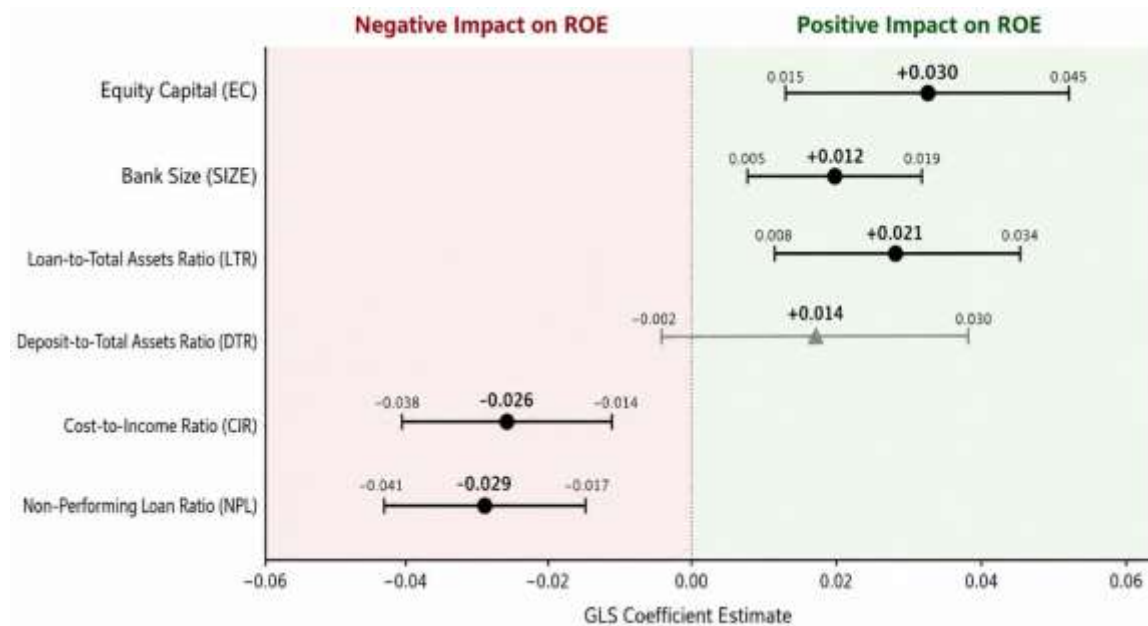


Figure 2. Empirical path diagram and standardized coefficients of the GLS profitability model

The finalized empirical path diagram is displayed in figure 2, where the explicit weightings of the parameters are overlaid on the structure. The path coefficients of the independent variables (Equity Capital) are significantly positive, and high, which indicates its significant role as an operational risk buffer. For the bank-specific control factors, the Loan-to-Total Assets Ratio shows a significant positive pathway ($\beta = 0.0205$), while the Deposit-to-Total Assets Ratio is statistically insignificant ($\beta = 0.0140$), and Bank Size ($\beta = 0.0119$) shows a significant positive pathway. On the other hand, the negative path factors for structural risk factors show clearly negative effect in the model, such as the Cost-to-Income Ratio ($\beta = -0.0261$) and the Non-Performing Loan Ratio ($\beta = -0.0291$). The uniform visual appearance of the layout conveys the message that asset quality management and structural reinforcement of capital is an important performance indicator in a bank.

DISCUSSION

Policy Implications

The results emphasize the important role of equity capital in improving the profitability of Vietnam's joint-stock commercial banks. Banking regulators and bank managers should therefore give priority to the enhancement of equity capital to boost risk-bearing capacity and ensure financial stability. Concurrently, banks need to implement appropriate expansion of scale of operations in order to avail economies of scale, which can help to boost operational efficiency and profitability. Moreover, enhancing cost management and reducing the non-performing loans is critical to the financial soundness of banks. Banks need to do more thorough credit risk management and better streamline its operations to reduce costs. Government and banking supervisory agencies should also develop policies to incentivize good risk management practices and enhance financial transparency to the banking system.

Limitations

There are a few limitations of this study. The sample only includes 30 Vietnamese commercial banks (excluding the state-owned commercial banks and foreign banks). Thus, the results can not be fully representative of the whole banking sector in Vietnam. Second, the analysis is mainly based on quantitative financial indicators, without considering non-financial factors, such as corporate governance, managerial quality, human resources, and external business environment, which can also affect the profitability of banks.

CONCLUSION

The primary objective of this study is to examine the effect of equity capital on the profitability of Vietnamese joint-stock commercial banks during the 2015–2024 period using panel data estimation techniques. The key empirical added value of the approach is the ability to consider at the same time equity structures and its critical operational determinants within an error-corrected panel setting. The empirical estimates are strong tests of the structural determinants of performance. The selected Generalized Least Squares (GLS) model has a high level of explanatory power ($R^2=0.740$), meaning that 74% of the variance of ROE is explained by the selected framework. The effect of Equity Capital on bank profitability is positive and highly significant with $\beta = 0.0301$ and $p\text{-value} < 0.01$, which makes it a valid instrument of strategic shock absorber as well as an operational risk buffer. In terms of bank-specific controls, both bank size increases ($\beta=0.0119$, $p<0.05$) and the Loan-to-Total Assets Ratio (LTA) increases ($\beta=0.0205$, $p<0.05$) have positive and significant impacts, supporting the scale and asset allocation efficiency argument, respectively. On the other hand, credit risk and operational inefficiencies generate strong, negative and statistically significant pressures on ROE through NPLR ($\beta=-0.0291$, $p<0.05$) and CIR ($\beta=-0.0261$, $p<0.05$). The results provide useful guidance for bankers and regulators in Vietnam for improving capital adequacy and asset quality to ensure the ongoing long-term health of banks. Based on these findings, further research is needed to include a wider range of banking tiers, including state-owned and foreign commercial banks. Further, the use of mixed-method or qualitative design, to account for non-financial features such as governance quality, internal risk management cultures and evolving macroeconomic policy parameters, would offer greater context and understanding of the micro-mechanisms underlying emerging market banking performance.

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