

THE RELATIONSHIP BETWEEN FINANCIAL STRUCTURE AND PROFITABILITY OF VIETNAMESE JOINT-STOCK COMMERCIAL BANKS

Nguyen Thi Binh Yen¹, Luong Van Hai¹

Email: binhuyen@hou.edu.vn, ORCID: 0009-0006-2847-5130

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Abstract: *This study examines the relationship between financial structure and profitability of Vietnamese joint-stock commercial banks during the period 2015-2024. Using panel data from 20 listed banks, the study applies the Fixed Effects Model (FEM), Random Effects Model (REM), and Dynamic Fixed Effects Model (DFEM) to evaluate the effects of financial structure on profitability, measured by Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). The empirical results indicate that financial structure significantly influences bank profitability. In particular, the equity-to-total assets ratio (EOA) has a positive effect on ROA, highlighting the importance of equity capital in improving financial performance. Among the control variables, the cost-to-income ratio (COI) and inflation (INF) also significantly affect profitability. Based on these findings, the study provides managerial and policy implications to enhance the financial stability and sustainable development of Vietnamese joint-stock commercial banks by strengthening equity capital, expanding customer deposits, and optimizing lending activities.*

Keywords: *financial structure, profitability, joint-stock commercial banks, return on assets (ROA), return on equity (ROE), net interest margin (NIM)*

I. Introduction

Vietnam provides an important context for examining the relationship between financial structure and bank profitability because its financial system is predominantly bank-based and its capital market remains relatively underdeveloped. Joint-stock commercial banks play a central role in financial intermediation. At the same time, recent banking restructuring, the implementation of Basel II, and the COVID-19 pandemic have substantially

changed banks' funding structures, risk management, and profitability.

Profitability is a key objective of commercial banks, as it supports shareholder value, financial stability, and sustainable economic growth. Financial structure, reflected in the composition of equity, deposits, leverage, and other funding sources, directly influences funding costs, liquidity, risk, and operational efficiency. Although previous studies have examined the relationship between

¹ Hanoi Open University, Hanoi, Vietnam

financial structure and bank profitability, several research gaps remain in Vietnam. Existing studies mainly focus on ownership structure, corporate governance, or capital adequacy rather than financial structure as a comprehensive concept. Moreover, they rarely consider the combined effects of different financing components or the impacts of Basel II implementation and the COVID-19 pandemic. In addition, most studies rely only on ROA and ROE, while Net Interest Margin (NIM), a key indicator of banks' core lending activities, has received limited attention. To address these gaps, this study investigates the relationship between financial structure and profitability of 20 listed Vietnamese joint-stock commercial banks during 2015-2024. Using panel data and the Fixed Effects Model (FEM), Random Effects Model (REM), and Dynamic Fixed Effects Model (DFEM), the study examines how multiple dimensions of financial structure affect ROA, ROE, and NIM.

The study contributes to the literature by providing updated evidence from Vietnam during a period of major regulatory reforms and economic shocks, extending financial structure theory to an emerging bank-centered economy, and offering practical implications for improving bank profitability, financial stability, and sustainable development.

II. Literature review

The relationship between financial structure and bank profitability has been widely examined in both international and Vietnamese literature. According to the capital structure theory of Modigliani and Miller (1958), capital structure is irrelevant under perfect market conditions. However, subsequent theories, particularly the trade-off theory, argue that

debt financing can enhance profitability through tax advantages while increasing financial risk.

Empirical evidence generally confirms that financial structure is an important determinant of bank profitability, although the findings remain inconclusive. Demirgüç-Kunt and Huizinga (1999) found that capital structure, bank size, financial development, and the legal environment significantly influence bank profitability. Studies by Allen and Emilia (2002), Hutchison and Cox (2007), Berger et al. (2008), and Trujillo-Ponce (2013) also highlight the roles of leverage, capitalization, asset quality, and macroeconomic conditions, while evidence from emerging markets (e.g., Musah, 2018; Timilsina, 2020) suggests mixed effects of equity, deposits, and inflation on bank performance.

In Vietnam, previous studies have primarily focused on capital, ownership structure, and corporate governance rather than the direct relationship between financial structure and profitability. For example, Le (2018) emphasized the role of bank capital in improving performance, Nguyen et al. (2021) reported positive effects of capitalization and loan ratios on profitability, and Lam and Vo (2023) found that ownership structure significantly influences bank performance.

Despite these contributions, limited evidence exists on how financial structure, particularly equity, leverage, deposits, and funding composition, affects the profitability of Vietnamese joint-stock commercial banks under recent structural changes such as Basel II implementation and the COVID-19 pandemic. This study addresses these gaps by providing updated empirical evidence for the period 2015-2024.

III. Research methodology

The research methodology outlines the process by which the authors derive their findings, including key aspects such as the research model, variables used, research hypotheses, sampling approach, and data processing methods.

International and Vietnamese scholars have predominantly employed quantitative research methods to examine the relationship between financial

structure and profitability, particularly regression models. In this study, the authors adopt a quantitative approach to assess the relationship between financial structure variables and control variables on bank profitability.

The proposed research model investigates the relationship between financial structure and profitability of Vietnamese joint-stock commercial banks, as shown in Figure 1:

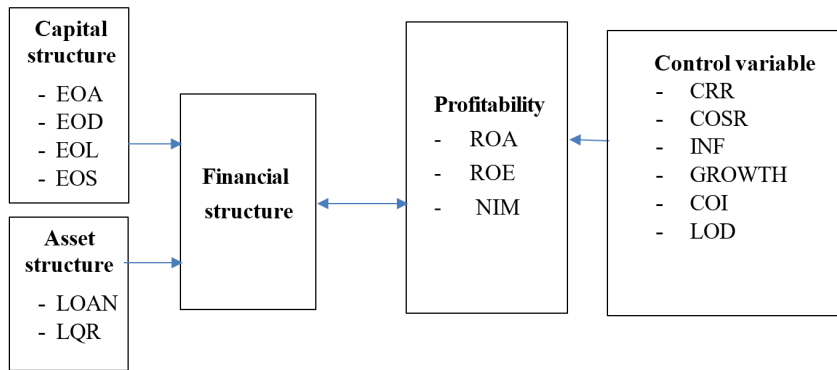


Figure 1. The proposed research model

(Source: Authors' team)

Research Hypotheses

Capital Structure

According to Modigliani and Miller (1958) and subsequent studies, capital structure significantly influences bank profitability. Equity-related variables such as equity-to-assets ratio (EOA), equity-to-deposits ratio (EOD), equity-to-loans ratio (EOL), and equity-to-securities ratio (EOS) are expected to positively affect profitability because stronger capitalization reduces financial risk and improves operational stability. Therefore:

H1: Capital structure positively influences the profitability of Vietnamese joint-stock commercial banks.

Asset Structure

Loan portfolios and liquidity are important components of bank asset structure.

A higher loan-to-asset ratio (LOAN) can increase profitability through greater interest income, while adequate liquidity (LQR) helps reduce funding pressure and financial risk. Prior studies generally support a positive relationship between these variables and profitability.

H2: Asset structure positively influences the profitability of Vietnamese joint-stock commercial banks.

Credit Risk Provisioning (CRR)

Higher credit risk provisions increase operating expenses and reduce short-term profitability. Although adequate provisioning may strengthen long-term stability, empirical studies generally report a negative relationship between credit risk and profitability.

H3: Credit risk negatively influences the profitability of Vietnamese joint-stock commercial banks.

Operating Costs (COSR)

The efficiency hypothesis suggests that higher operating costs reflect lower managerial efficiency and reduced profitability. Empirical evidence from emerging markets also confirms this negative relationship.

H4: Operating costs negatively influence the profitability of Vietnamese joint-stock commercial banks.

Inflation (INF)

The impact of inflation on bank profitability depends on banks' ability to adjust lending rates and manage costs. In emerging economies such as Vietnam, high or unstable inflation is generally associated with lower profitability due to rising funding costs and deteriorating credit quality.

H5: Inflation negatively influences the profitability of Vietnamese joint-stock commercial banks.

Asset Growth (GROWTH)

Moderate asset growth can improve profitability by expanding lending

activities and income sources. However, excessive growth may increase credit risk and operating costs. Therefore, controlled asset growth is expected to affect profitability positively.

H6: Asset growth positively influences the profitability of Vietnamese joint-stock commercial banks.

Cost-to-Income Ratio (COI)

The cost-to-income ratio reflects operational efficiency. Banks with lower COI generally achieve better profitability due to effective cost management and technological improvements.

H7: The cost-to-income ratio negatively influences the profitability of Vietnamese joint-stock commercial banks.

Loan-to-Deposit Ratio (LOD)

A high loan-to-deposit ratio may increase liquidity risk and funding costs, particularly in bank-based economies such as Vietnam. Consequently, excessive LOD is expected to reduce profitability.

H8: The loan-to-deposit ratio negatively influences the profitability of Vietnamese joint-stock commercial banks.

Table 1. Description of variables in the model

Variable name and direction of impact	Recipe	Reference
<i>Dependent variable: Profitability</i>		
ROA	Pre-tax profit * 100% / Total Assets	Osborne et al. (2011); Kundid (2012); Trujillo-Ponce (2013); Al-Keyed et al. (2014); Birru (2016); Musah (2018); Timilsina (2020); Lam and Vo (2023); Vuong et al. (2022)
ROE	Profit before tax*100%/Equity	Berger and Bonaccorsi (2006); Hutchison and Cox (2006); Bach (2006); Osborne et al. (2011); Trujillo-Ponce (2013); Al-Keyed et al. (2014); Musah (2018); Vuong et al. (2022).
NIM	Net interest income*100% / Average earning assets	The authors added additional information to the model.

Variable name and direction of impact	Recipe	Reference
Independent variable: Financial structure		
EOA (+)	Equity*100%/Total Assets	Bach (2006); Osborne et al. (2011); Al-Kayed et al. (2014); Demirgüç-Kunt and Huizinga (2019); Altunbas et al. (2020); Lepetit and Strobel (2022); Vuong et al. (2022).
LOAN (+)	Loan balance*100%/Total assets	Birru (2016); Berger et al. (2008); Tran and Nguyen (2023); Vuong et al. (2022).
LQR (+)	Total liquid assets*100%/Total assets	Musah (2018); Timilsina (2020); Birru (2016); Berger et al. (2008); Tran and Nguyen (2023); Vuong et al. (2022); Lam and Vo (2023).
EOD (+)	Equity*100%/Total Debt	Bach (2006); Osborne et al. (2011); Al-Kayed et al. (2014); Demirgüç-Kunt and Huizinga (2019); Altunbas et al. (2020); Lepetit and Strobel (2022); Vuong et al. (2022); Lam and Vo (2023).
EOL (+)	Equity*100%/ Loan balance	Trujillo-Ponce (2013); Al-Kayed et al. (2014); Bach (2006); Osborne et al. (2011); Al-Kayed et al. (2014); Demirgüç-Kunt and Huizinga (2019); Altunbas et al. (2020); Lepetit and Strobel (2022); Vuong et al. (2022); Lam and Vo (2023).
EOS (+)	Equity*100%/ Total customer deposits and Short-term financing	Trujillo-Ponce (2013); Al-Kayed et al. (2014); Musah (2018); Bach (2006); Osborne et al. (2011); Al-Kayed et al. (2014); Demirgüç-Kunt and Huizinga (2019); Altunbas et al. (2020); Lepetit and Strobel (2022); Vuong et al. (2022); Vuong et al. (2022).
Control variable		
CRR (-)	This year's Credit Risk provision*100%/Total outstanding credit debt last year	Trujillo-Ponce (2013); Altunbas et al. (2007); Louzis et al. (2012); Vuong et al. (2022); Nguyen and Mai (2024).
COSR (-)	Operating expenses*100%/Total assets	Berger and Mester (1997); Musah (2018); Hughes et al. (2019); Moussa (2018); Lam and Vo (2023); Nguyen and Mai (2024).
INF (-)	Inflation rate	Birru (2016); Vuong et al. (2022); Dietrich and Wanzenried (2023).
GROWTH (+)	Increase in total assets	Berger and Mester (1997); Birru (2016); Demirgüç-Kunt and Huizinga (2019); Vuong et al. (2022).
COI (-)	Total expenses*100%/Total income	Vuong et al. (2022).
LOD (-)	Net lending*100%/Total deposits	The authors added additional information to the model.

(Source: Authors' team)

Data Collection and Processing:

The data used in this study were collected from the annual reports of the State Bank of Vietnam and audited financial statements of Vietnamese joint-

stock commercial banks as of December 31, 2024. The research sample includes 20 joint-stock commercial banks listed on the Hanoi Stock Exchange (HNX) and the Ho Chi Minh City Stock Exchange (HoSE)

during the period 2015-2024, ensuring data consistency and reliability. Secondary data were obtained from audited financial statements, the State Bank of Vietnam, and official government sources.

The period 2015-2024 was selected because it reflects major structural and regulatory changes in the Vietnamese banking sector. During this period, banks underwent restructuring under Project

254, implemented Basel II standards, and experienced the impacts of economic fluctuations and the COVID-19 pandemic. These events significantly influenced capital structure, risk management, and profitability. Therefore, the selected timeframe provides an appropriate context for examining the relationship between financial structure and profitability of Vietnamese joint-stock commercial banks.

Table 2. Research banking group

Order	Stock code	Name	Trading platform
1	ACB	Asia Commercial Joint Stock Bank	HoSE
2	BAB	Bac A Commercial Joint Stock Bank	HNX
3	BID	Joint Stock Commercial Bank for Investment and Development of Vietnam	HoSE
4	CTG	Vietnam Industry and Trade Joint Stock Commercial Bank	HoSE
5	EIB	Vietnam Import-Export Joint Stock Commercial Bank	HoSE
6	HDB	Ho Chi Minh City Development Joint Stock Commercial Bank	HoSE
7	LPB	Lien Viet Post Office Joint Stock Commercial Bank	HoSE
8	MBB	Military Joint Stock Commercial Bank	HoSE
9	MSB	Vietnam Maritime Commercial Joint Stock Bank	HoSE
10	NAB	Nam A Commercial Joint Stock Bank	HoSE
11	NVB	Quoc Dan Commercial Joint Stock Bank	HNX
12	OCB	Phuong Dong Commercial Joint Stock Bank	HoSE
13	SHB	Saigon - Hanoi Joint Stock Commercial Bank	HoSE
14	SSB	Southeast Asia Commercial Joint Stock Bank	HoSE
15	STB	Saigon Thuong Tin Commercial Joint Stock Bank	HoSE
16	TCB	Vietnam Technological and Commercial Joint Stock Bank	HoSE
17	TPB	Tien Phong Joint Stock Commercial Bank	HoSE
18	VCB	Joint Stock Commercial Bank for Foreign Trade of Vietnam	HoSE
19	VIB	Vietnam International Commercial Joint Stock Bank	HoSE
20	VPB	Vietnam Prosperity Joint Stock Commercial Bank	HoSE

(Source: Authors' team)

Panel regression techniques were employed because they combine the advantages of both cross-sectional and time-series data. Specifically, panel data allows the study to (i) capture the heterogeneity across banks, (ii) account for temporal dynamics in financial performance, and (iii) improve the efficiency and robustness of parameter estimates compared with pure cross-sectional or time-series approaches. This approach is particularly suitable

for assessing the relationship between financial structure and profitability, as both bank-specific characteristics and macroeconomic fluctuations play a role.

IV. Research findings and discussion

Before selecting the appropriate regression model, the authors examined the research dataset through several tests, including the cross-sectional dependence test, cointegration test, and multicollinearity test in the pooled (POOL) model.

Table 3. Multicollinearity test results for ROA in the pooled model

Variable	VIF	1/VIF
DOL	4.24	0.235727
LOAN	3.35	0.298744
IOC	2.22	0.451284
COSR	1.25	0.802556
LQR	1.33	0.612903
CRR	1.21	0.824532
GROWTH	1.09	0.919856
INF	1.11	0.901347
Mean VIF	1.97	

(Source: Calculations by the authors using STATA17 software)

Table 4. Results of 04 models POOL (1), FEM (2), REM (3), GLS (4) between the dependent variable ROA and other variables in the equation

	(1) ROA	(2) ROA	(3) ROA	(4) ROA
DOL	0.0101** [2.44]	0.00924 [1.39]	-0.00112 [-0.19]	0.00548 [1.14]
LOAN	-0.0124** [-2.38]	0.00164 [0.16]	-0.00371 [-0.44]	-0.0137* [-1.82]
LQR	0.00415 [0.80]	0.00601 [1.00]	0.00844 [1.58]	-0.000410 [-0.10]
CRR	-0.265*** [-4.63]	-0.198*** [-3.31]	-0.237*** [-4.28]	-0.125*** [-2.64]
COSR	0.371*** [5.70]	0.0766 [0.69]	0.192** [2.46]	0.258*** [3.89]
INF	0.0539*** [2.80]	0.0615*** [3.59]	0.0491*** [2.87]	0.0427*** [3.48]
GROWTH	0.00291 [1.19]	0.00545** [2.24]	0.00586** [2.51]	0.00162 [0.89]
IOC	-0.0655*** [-18.17]	-0.0514*** [-10.73]	-0.0550*** [-14.39]	-0.0471*** [-14.66]
AOE		-0.241 [-0.85]	-0.0621 [-0.24]	0.424* [1.65]
DOE		0.204 [0.86]	0.0465 [0.21]	-0.176 [-0.79]
LOE		-0.0463* [-1.80]	-0.0543** [-2.52]	-0.0687*** [-3.11]
SOE		0.0939 [1.57]	0.129** [2.27]	-0.00974 [-0.19]
_cons	5.800*** [10.88]	4.011*** [4.96]	5.099*** [7.39]	4.086*** [6.78]
N	200	200	200	200
R-sq	0.818	0.801		

t statistics in brackets * p<0.1, ** p<0.05, *** p<0.01

(Source: Calculations by the authors using STATA17 software)

The research team obtained the following regression equation:

$$\text{ROA} = 0.424* \text{EOA} - 0.0687* \text{EOL} - 0.0137* \text{LOAN} - 0.125* \text{CRR} + 0.258* \text{COSR} + 0.0427* \text{INF} - 0.0471* \text{COI} + 4.086$$

Table 5. Multicollinearity test results for NIM in the pooled model

Variable	VIF	1/VIF
LOC	1.74	0.573569
LOAN	1.32	0.757358
IOC	1.24	0.804239
COSR	1.19	0.839420
LQR	1.09	0.914570
CRR	1.09	0.918356
GROWTH	1.09	0.919856
INF	1.09	0.920067
Mean VIF	1.25	

(Source: Calculations by the authors using STATA17 software)

Table 6. Results of 04 models POOL (1), FEM (2), REM (3), GLS (4) between the dependent variable NIM and other variables in the equation

	(1) NIM	(2) NIM	(3) NIM	(4) NIM
LOAN	0.00185 [0.45]	-0.00304 [-0.32]	-0.00634 [-0.68]	-0.0139** [-2.13]
LQR	-0.0119** [-2.02]	-0.00984* [-1.74]	-0.0107* [-1.91]	-0.00433 [-1.43]
CRR	-0.0156 [-0.22]	-0.133** [-2.37]	-0.112** [-1.98]	-0.0983** [-2.34]
COSR	1.483*** [18.03]	1.268*** [12.28]	1.275*** [13.82]	1.195*** [15.60]
INF	0.0221 [0.92]	0.0277* [1.73]	0.0265 [1.61]	0.0284*** [2.71]
GROWTH	-0.000224 [-0.07]	-0.00359 [-1.57]	-0.00290 [-1.25]	-0.00292* [-1.75]
IOC	-0.0643*** [-15.91]	-0.0712*** [-15.86]	-0.0678*** [-15.93]	-0.0595*** [-18.73]
AOE		0.383 [1.44]	0.318 [1.19]	-0.0775 [-0.31]
DOE		-0.347 [-1.56]	-0.321 [-1.42]	0.0697 [0.32]
LOE		-0.0332 [-1.38]	-0.0465** [-1.96]	-0.0760*** [-3.45]
SOE		0.101* [1.81]	0.137** [2.42]	0.0958** [2.06]
DOL		-0.00746 [-1.20]	-0.00635 [-1.02]	-0.00509 [-1.25]
_cons	5.599*** [9.11]	7.055*** [9.32]	6.979*** [9.48]	7.171*** [11.84]
N	200	200	200	200
R-sq	0.854	0.848		

t statistics in brackets * p<0.1, ** p<0.05, *** p<0.01

(Source: Calculations by the authors using STATA17 software)

The research team obtained the following regression equation:

$$\text{NIM} = 0.0958 \cdot \text{EOS} - 0.0760 \cdot \text{EOL} - 0.0139 \cdot \text{LOAN} - 0.0983 \cdot \text{CRR} + 1.195 \cdot \text{COSR} \\ + 0.0284 \cdot \text{INF} - 0.00292 \cdot \text{GROWTH} - 0.0595 \cdot \text{COI} + 7.171$$

Table 7. DFE model results between the dependent variable ROE and other variables in the equation (long-term significance)

Dynamic Fixed Effects Regression: Estimated Error Correction Form (Estimate results saved as DFE)							
		Coefficient	Std. err.	z	P> z	[95% conf. interval]	
_ec	EOA	-4.552331	6.326721	-0.72	0.472	-16.95248	7.847815
	LOAN	.1426705	.2450975	0.58	0.561	-.3377118	.6230528
	LQR	-.0141513	.1459006	-0.10	0.923	-.3001113	.2718086
	EOD	2.467445	5.351096	0.46	0.645	-8.02051	12.9554
	EOL	.6442017	.6184909	1.04	0.298	-.5680181	1.856422
	EOS	-.9363293	1.52154	-0.62	0.538	-3.918493	2.045834
	CRR	.9551592	1.587239	0.60	0.547	-2.155772	4.066091
	COSR	7.239605	2.835835	2.55	0.011	1.681472	12.79774
	INF	1.691351	.5216642	3.24	0.001	.6689084	2.713795
	GROWTH	.2734068	.0773844	3.53	0.000	.121736	.4250775
	COI	-.7068164	.1322269	-5.35	0.000	-.9659763	-.4476565
	LOD	.1534891	.152832	1.00	0.315	-.1460561	.4530342

(Source: Calculations by the authors using STATA17 software)

Table 8. DFE model results between the dependent variable ROE and other variables in the equation (short-term significance)

Dynamic Fixed Effects Regression: Estimated Error Correction Form (Estimate results saved as DFE)							
		Coefficient	Std. err.	z	P> z	[95% conf. interval]	
SR	_ec	-.4919132	.0710582	-6.92	0.000	-.6311847	-.3526418
	EOA						
	D1.	6.40516	3.988596	1.61	0.108	-1.412345	14.22267
	LOAN						
	D1.	.0760989	.1256817	0.61	0.545	-.1702328	.3224305
	LQR						
	D1.	.0394692	.0606719	0.65	0.515	-.0794454	.1583839
	EOD						
	D1.	-5.436915	3.362191	-1.62	0.106	-12.02669	1.152859
	EOL						
	D1.	.3617273	.3054216	1.18	0.236	-.2368879	.9603426
	EOS						
	D1.	-.043917	.7147867	-0.06	0.951	-1.444873	1.357039
	CRR						
	D1.	-.5495246	.6821465	-0.81	0.420	-1.886507	.787458

	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
COSR						
D1.	1.658493	1.300385	1.28	0.202	-.8902144	4.207201
INF						
D1.	.0544378	.1806287	0.30	0.763	-.2995879	.4084635
GROWTH						
D1.	-.0637965	.02437	-2.62	0.009	-.1115608	-.0160323
COI						
D1.	-.1189992	.0650248	-1.83	0.067	-.2464455	.0084471
LOD						
D1.	.0182699	.0772166	0.24	0.813	-.1330718	.1696117
_cons	20.72894	9.828288	2.11	0.035	1.465853	39.99203

(Source: Calculations by the authors using STATA17 software)

$$\text{ROE} = 6.405 \cdot \text{AOE} - 5.437 \cdot \text{DOE} - 0.364 \cdot \text{GROWTH} + 7.24 \cdot \text{COSR} + 1.691 \cdot \text{IFN} - 0.827 \cdot \text{IOC} + 20.73$$

Table 9. Summary of results of the impact of variables on profitability

Order	Independent variable	Dependent variable			Hypothesis	Result
		ROA	ROE	NIM		
1	EOA	+	+		+	Confirmed correct hypothesis
2	LOAN	-		-	+	The confirmation is not correct according to the hypothesis
3	LQR					*
4	EOD		-		+	The confirmation is not correct according to the hypothesis
5	EOL	-		-	+	The confirmation is not correct according to the hypothesis
6	EOS			+	+	Confirmed correct hypothesis
7	CRR	-		-	-	Confirmed correct hypothesis
8	COSR	+	+	+	-	The confirmation is not correct according to the hypothesis
9	INF	+	+	+	-	The confirmation is not correct according to the hypothesis
10	GROWTH		-	-	+	The confirmation is not correct according to the hypothesis
11	COI	-	-	-	-	Confirmed correct hypothesis
12	LOD					*

* Not statistically significant

(Source: Authors' team)

After collecting audited financial statement data from 20 listed Vietnamese joint-stock commercial banks during 2015-2024, the study obtained 200 observations and analyzed them using STATA 17. The Fixed Effects Model (FEM), Random Effects Model (REM), and Dynamic Fixed

Effects Model (DFEM) were selected as the most appropriate models for ROA, NIM, and ROE, respectively.

The results indicate that financial structure significantly influences bank profitability. Equity-related variables (EOA

and EOS) positively affect profitability, whereas LOAN, EOD, and EOL generally show negative effects. However, several findings differ from the initial hypotheses. LOAN positively affects NIM, suggesting that lending remains the primary source of bank income. Similarly, EOD and EOL improve profitability, reflecting banks' reliance on low-cost customer deposits. COSR also has a positive effect, implying that investments in technology and network expansion may enhance long-term performance. By contrast, inflation negatively affects profitability, while LQR and LOD are statistically insignificant.

Among the control variables, non-interest income and COSR positively influence profitability. In contrast, CRR, GROWTH, and COI have negative effects, indicating the importance of cost efficiency, income diversification, and risk management. NIM exhibits a pattern similar to ROA but differs from ROA in that ROE is more sensitive to capital structure and leverage.

Overall, the findings generally support previous studies while highlighting the importance of Vietnam's institutional context, particularly Basel II implementation, credit growth policies, and the COVID-19 pandemic, in shaping the relationship between financial structure and bank profitability.

V. Recommendations and conclusion

Enhancing profitability is a key objective of Vietnamese joint-stock commercial banks. Based on the empirical findings, several recommendations are proposed to improve profitability by better managing the financial structure.

Recommendation to Increase Equity Capital

Banks should strengthen equity capital through retained earnings and

share issuance to improve profitability and financial resilience. Smaller banks may consider mergers or consolidation with larger institutions to enhance capital strength and competitiveness. In addition, banks should improve cost efficiency by reducing unnecessary expenses and avoiding ineffective investments to support long-term capital accumulation.

Recommendation to Increase Customer Deposits

Customer deposits remain the most stable and cost-effective funding source for banks. Therefore, banks should strengthen deposit mobilization by improving credibility, offering competitive deposit products, and expanding digital banking services. At the same time, banks should balance deposit growth with prudent risk management and avoid excessive dependence on short-term liabilities.

Recommendation to Expand Lending Activities

Although the regression results indicate that the loan ratio (LOAN) negatively affects profitability, this finding does not imply that commercial banks should reduce lending activity. Lending remains the core business and the primary source of income for Vietnamese joint-stock commercial banks, contributing substantially to interest income and overall business growth. The negative coefficient instead suggests that excessive loan expansion may reduce profitability because of higher credit risk, increased provisioning expenses, and rising funding and monitoring costs. Therefore, banks should continue expanding lending activities, but prudently and sustainably. Credit growth should be accompanied by rigorous credit appraisal, effective risk management, and portfolio diversification to maintain asset quality. Banks should prioritize lending to

sound borrowers and productive sectors while limiting excessive exposure to high-risk industries. At the same time, digital technologies and data analytics should be used to improve the efficiency of credit assessment and monitoring, thereby reducing operating costs and non-performing loans. In addition, loan growth should be balanced with adequate capital, stable deposit funding, and regulatory requirements under Basel II and Basel III. Such an approach enables banks to preserve the benefits of lending as their principal revenue source while minimizing the adverse effects of excessive credit expansion on long-term profitability and financial stability.

Additional Recommendations

Vietnamese joint-stock commercial banks should continue to improve capital adequacy in line with Basel II and Basel III standards, strengthen governance and internal control systems, and invest in digital transformation to enhance operational efficiency. Banks should also diversify income sources beyond traditional lending activities to reduce risk and enhance sustainable profitability.

For policymakers, maintaining stable inflation and strengthening banking supervision are essential for supporting financial stability. The State Bank of Vietnam should continue refining monetary policy tools, promoting financial market development, and encouraging compliance with international banking standards to ensure sustainable growth of the banking sector.

Conclusion

This study demonstrates that financial structure significantly influences the profitability of Vietnamese joint-stock commercial banks. However, the observed relationships differ from the

predictions of traditional capital structure theories because of Vietnam's bank-centered financial system and unique institutional environment. The findings show that stronger equity capital enhances profitability, whereas excessive reliance on debt, rapid credit expansion, inflation, and inefficient cost management may weaken bank performance.

The study contributes to the literature by providing updated evidence from Vietnam during a period marked by Basel II implementation and the COVID-19 pandemic, highlighting the importance of institutional and regulatory factors in shaping the relationship between financial structure and profitability. The findings also offer practical implications for bank managers and policymakers in designing appropriate financial structures, strengthening risk management, and promoting sustainable banking development.

Finally, although this study focuses on the impact of financial structure on profitability, the relationship may be bidirectional. Consistent with the pecking order theory and dynamic capital structure theory, more profitable banks may accumulate retained earnings, strengthen equity capital, and reduce reliance on external financing. Future research could therefore examine this reverse relationship using dynamic panel models or simultaneous equation approaches to provide a more comprehensive understanding of the interaction between financial structure and bank profitability.

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MỐI QUAN HỆ GIỮA CẤU TRÚC TÀI CHÍNH VÀ KHẢ NĂNG SINH LỢI CỦA CÁC NGÂN HÀNG THƯƠNG MẠI CỔ PHẦN VIỆT NAM

Nguyễn Thị Bình Yên¹, Lương Văn Hải¹

Tóm tắt: Nghiên cứu này xem xét mối quan hệ giữa cấu trúc tài chính và khả năng sinh lợi của các ngân hàng thương mại cổ phần Việt Nam trong giai đoạn 2015-2024. Sử dụng dữ liệu bảng của 20 ngân hàng niêm yết, nghiên cứu áp dụng các mô hình hồi quy gồm Mô hình tác động cố định (FEM), Mô hình tác động ngẫu nhiên (REM) và Mô hình tác động cố định động (DFEM) để đánh giá tác động của cấu trúc tài chính đến khả năng sinh lợi, được đo lường thông qua tỷ suất sinh lợi trên tổng tài sản (ROA), tỷ suất sinh lợi trên vốn chủ sở hữu (ROE) và biên lãi ròng (NIM). Kết quả thực nghiệm cho thấy cấu trúc tài chính có ảnh hưởng đáng kể đến khả năng sinh lợi của ngân hàng. Đặc biệt, tỷ lệ vốn chủ sở hữu trên tổng tài sản (EOA) có tác động tích cực đến ROA, khẳng định vai trò quan trọng của vốn chủ sở hữu trong việc nâng cao hiệu quả hoạt động và hiệu quả tài chính. Bên cạnh đó, các biến kiểm soát như tỷ lệ chi phí trên thu nhập (COI) và lạm phát (INF) cũng có ảnh hưởng đáng kể đến khả năng sinh lợi. Trên cơ sở các kết quả nghiên cứu, bài viết đề xuất một số hàm ý quản trị và chính sách nhằm tăng cường sự ổn định tài chính và thúc đẩy sự phát triển bền vững của các ngân hàng thương mại cổ phần Việt Nam thông qua việc tăng cường vốn chủ sở hữu, mở rộng huy động tiền gửi khách hàng và tối ưu hóa hoạt động cho vay.

Từ khóa: cấu trúc tài chính, khả năng sinh lời, ngân hàng thương mại cổ phần, tỷ suất sinh lời trên tổng tài sản (ROA), tỷ suất sinh lời trên vốn chủ sở hữu (ROE), biên lãi ròng (NIM)

¹ Trường Đại học Mở Hà Nội, Hà Nội, Việt Nam