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IMPACT OF MARKET STRUCTURE ON THE PERFORMANCE OF VIETNAMESE COMMERCIAL BANK

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CHAPTER 1. RESEARCH INTRODUCTION

1.1. Rationale for the Research Topic

The structure of the banking market, as reflected by market concentration and market power within the banking industry (Dickson, 1981; Marfels, 1971), is a critical factor influencing the performance of banks and the stability of the national financial system. In the context of economic globalization and the increasing risks and financial crises facing the banking sector, market instability has become a pressing issue. As a result, commercial banks (CBs) are paying closer attention to enhancing their competitiveness by assessing market concentration and market power through the lens of market structure. Countries are increasingly focusing on banking market restructuring to enhance resilience to systemic risks and improve the efficiency of resource allocation. Notably, following the 2008 global financial crisis, theoretical and empirical research into the impact of market structure on bank performance has gained significant momentum.Classical theories such as the Market Power Hypothesis, Efficient Structure Hypothesis, and models like Structure–Conduct–Performance (SCP) and Market Power vs. Efficient Structure (MP–ES) provide the theoretical foundation for explaining the relationship between market concentration and bank performance. However, empirical findings remain inconclusive. While some studies support the positive effect of market concentration on bank performance (Berger & Hannan, 1998; Silalahi et al., 2015; Sakti, 2020), others argue that high concentration reduces competition, increases costs, and negatively impacts performance (Tarus & Cheruiyot, 2015; Oyebola & Zayyad, 2021).

In Vietnam, following a period of banking sector restructuring driven by key government programs (2011–2020), the banking market has undergone substantial changes in terms of market concentration and power. These changes include the growing dominance of the State-owned Big Four CBs and the increasing market share of foreign banks. Nevertheless, domestic research on banking market structure remains fragmented and lacks a systematic approach. Most studies employ only a single measure (such as CRk or HHI), without jointly incorporating market behavior indicators like the Lerner Index. Importantly, a significant research gap lies in the absence of institutional factors in existing analytical models. As a developing economy heavily influenced by its institutional environment, Vietnam requires the inclusion of variables such as Government Effectiveness (GE), Regulatory Quality (RQ), and Rule of Law (LR) in the analysis. Institutions affect not only the competitive behavior of banks but also how the market responds to policy shocks and macroeconomic conditions.

Against this backdrop, and in response to both theoretical and practical demands—while building on and addressing the limitations of previous studies—this dissertation titled "The Impact of Market Structure on the Performance of Vietnamese Commercial Banks" pursues three main objectives:(i) to comprehensively measure market structure using three indicators: CR4, HHI, and the Lerner Index;(ii) to assess the impact of market structure on bank performance using both ROA and ROE;(iii) to test the independent role of national institutional quality in this relationship—an especially relevant inquiry given Vietnam's increasing integration into international financial institutions and its exposure to competition from both foreign banks and FinTech companies.

1.2 Research Objectives and Research Questions

1.2.1 General Research Objective

The general research objective of the thesis is to evaluate the impact of banking market structure on the performance of Vietnamese commercial banks and to evaluate the impact of institutional quality in the relationship between banking market structure and the performance of Vietnamese commercial banks.

1.2.2 Specific Research Objectives

First, study the impact of the level of banking market concentration on the performance of Vietnamese commercial banks.

Second, study the impact of banking market power on the performance of Vietnamese commercial banks.

Third, study the impact of institutional quality in the relationship between banking market structure and the performance of Vietnamese commercial banks.

1.2.3. Research Questions

To achieve the specific research objectives mentioned above, the thesis focuses on solving the following research questions:

Question 1: How does the level of market concentration affect the performance of Vietnamese commercial banks?

Question 2: How does the power of the banking market affect the performance of Vietnamese commercial banks?

Question 3: In the relationship between the structure of the banking market and the performance of Vietnamese commercial banks, how does institutional quality affect the performance of Vietnamese commercial banks?

1.3. Research Subjects and Scope

1.3.1. Research Subjects

The main research objects of the thesis are: Banking market structure, operational performance of Vietnamese commercial banks, the impact of banking market structure on operational performance of Vietnamese commercial banks, and the role of institutional quality in the relationship between banking market structure and operational performance of Vietnamese commercial banks.

1.3.2. Research Scope

Within the scope of this study, the author focuses on analyzing the level of banking market concentration and banking market strength, along with the institutional quality of 26 Vietnamese commercial banks in the period 2009-2022. The author selected 26 Vietnamese commercial banks for research because these 26 banks have sufficient research data in the research period 2009-2022 (The list of 26 Vietnamese commercial banks is shown in "Appendix 1"). The list of 26 Vietnamese commercial banks accounts for about 84% of the 31 Vietnamese commercial banks as of June 30, 2024. (State Bank of Vietnam, 2024). This research data sample ensures representativeness for the Vietnamese commercial banking system and does not take into account joint-venture commercial banks and foreign commercial banks in Vietnam due to heterogeneity in characteristics and organizational structure." - "Research data is taken from audited consolidated financial statements of 26 Vietnamese commercial banks, statistical data of the International Monetary Fund (IMF) and the World Bank.

1.4. Research Methodology

The study utilizes secondary data collected from verified and officially published sources, including:

(i) audited financial statements of Vietnamese commercial banks during the period 2011–2022, and (ii) international databases, such as those from the World Bank and the International Monetary Fund (IMF), to gather indicators reflecting institutional quality and macroeconomic variables. To achieve the research objectives and answer the three proposed research questions, the dissertation employs a series of quantitative analyses based on panel data, using the following regression models: Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), Random Effects Model (REM), Feasible Generalized Least Squares (FGLS), and particularly the System Generalized Method of Moments (SGMM), which is applied to address issues of endogeneity, heteroskedasticity, and autocorrelation in the model.

(1) To answer the first research question: How does market concentration affect the performance of Vietnamese commercial banks?
The dissertation uses dependent variables that reflect bank performance, measured by two indicators: Return on Assets (ROA) and Return on Equity (ROE). The independent variables representing banking market concentration include:

- CR4: The four-bank concentration ratio, measured across three dimensions—total assets, deposits, and loans.
- HHI: The Herfindahl–Hirschman Index, measuring overall industry concentration based on assets, deposits, and loans.
- Lerner Index: A measure of the market power of individual banks.

The control variables incorporated into the model include Bank-specific variables: LLP (Loan Loss Provisions ratio), Size (bank size, typically measured by total assets). Macroeconomic variables, Inflation rate, GDP growth rate.

(2) To answer the second research question: How does banking market power affect the performance of Vietnamese commercial banks? The dissertation again uses ROA and ROE as dependent variables to measure bank performance and employs the Lerner Index as the key independent variable representing market power. The control variables included are the same as in the first model: Bank-specific variables: LLP (Loan Loss Provisions ratio), Size. Macroeconomic variables: Inflation, GDP.

(3) To answer the third research question: Within the relationship between banking market structure and performance of Vietnamese commercial banks, what is the role of institutional quality?
The analysis continues to use ROA and ROE as dependent variables. The key independent variables in this model are institutional quality indicators, derived from the Worldwide Governance Indicators (WGI) developed by the World Bank, including GE: Government Effectiveness, RQ: Regulatory Quality, LR: Rule of Law.

The control variables remain consistent: Bank-specific variables: LLP, Size. Macroeconomic variables: Inflation, GDP.

1.5. New Contributions to the Dissertation

1.5.1. New Scientific Contributions

The thesis makes outstanding academic contributions, demonstrated through the following new points:

Firstly, the thesis combines all three groups of indicators representing the banking market structure (including: market concentration level - CR4 and HHI; market power - Lerner index) in the model, using the SGMM (System GMM) estimation method. Simultaneously analyzing the effects of CR4, HHI and Lerner to expand the scope of SCP (Structure-Conduct-Performance) theory as well as Market Power (MP) theory, previous studies only considered one of the above indicators or applied static models.

Second, the thesis has supplemented the analytical framework by introducing three indicators representing institutional quality (Government Effectiveness – GE, Regulatory Quality – RQ, Rule of Law – LR) into the model to test the independent role of institutions on bank performance. Unlike many previous studies that mainly focused on market structure, this study has shown the difference in the level and direction of impact of each institutional element on ROA and ROE. This is an important contribution to expanding the banking economic analysis framework towards integrating institutional factors – which is especially meaningful in the context of transitional economies like Vietnam.

Third, the study compared and clarified the differences in the direction and level of impact of market structure and institutional variables on two indicators of bank performance: ROA and ROE. The results showed that some factors such as HHI_Loans, CR4_Loans and LLP can have an

opposite impact between ROA and ROE - something that most previous studies have not clearly distinguished. This is a new point showing that it is necessary to view bank performance not only from the perspective of return on assets (ROA) but also from the perspective of return on equity (ROE).

Fourthly, the thesis provides evidence on the different levels of impact of macroeconomic factors (Inflation, GDP) and internal factors (Size, LLP) of bank performance, with a clear discrepancy between ROA and ROE. Inflation control promotes growth in ROA and ROE, while GDP growth shows opposite effects in the model. This contributes empirically and clarifies the role of macroeconomic factors in bank governance.

Fifth, the thesis is one of the very few studies in Vietnam that uses a long-term balanced panel dataset (2009–2022) combined with the SGMM dynamic model estimation method to handle endogeneity issues in the relationship between market structure, institutions and banking performance. This is a significant contribution in terms of methodology, improving the robustness and generalizability of the research results – a new point of academic value compared to previous studies that mainly used static models or short-term data.

1.5.2. New practical contributions

In addition to academic contributions, the thesis also brings practical value through specific results and policy recommendations:

First, the study provides updated and comprehensive empirical evidence on the impact of market structure and institutions on the performance of Vietnamese commercial banks. These results are an important basis for

the State Bank of Vietnam (SBV) to develop appropriate market regulation policies, especially in the context of restructuring the banking system and competition with international financial institutions and financial technology companies (FinTech).

Second, the study shows that institutional quality plays an important role in improving bank performance but can also put pressure on compliance costs in the short term. This is an important warning for policy makers when designing regulatory regulations – they need to aim for transparency and stability but at the same time reduce unnecessary administrative costs to avoid reducing bank performance.

Third, the research results provide clear strategic recommendations for Vietnamese commercial banks as follows:

Take advantage of market power (Lerner index) to optimize pricing capabilities and selectively expand market share.

Closely monitor the level of credit and asset concentration, avoiding systemic risks when market share is concentrated in a group of large banks.

Proactively invest in digital transformation, diversify financial products and improve risk management to increase capital efficiency without sacrificing asset efficiency.

Fourth, the research provides specific recommendations on monetary policy management: Control inflation to maintain bank profitability, too high economic growth leads to increased credit risk. It is recommended that the State Bank of Vietnam closely monitor macroeconomic

indicators, combine credit regulation and exchange rate stabilization to maintain operational efficiency and stabilize the banking system.

Fifth, the results show different impacts between ROA and ROE under the same factor, suggesting that banks need to pursue a dual strategy: optimizing asset utilization efficiency and simultaneously closely managing equity. This is especially important during the period of increasing equity capital to comply with Basel II and Basel III.

In short, the thesis not only contributes to filling the theoretical gap on the impact of market structure and institutions on bank efficiency but also brings clear practical value to policy management and banking management strategies in the context of deep financial integration and increasing competitive pressure.

1.6. Thesis layout

The structure of the dissertation includes 05 chapters as follows:

Chapter 1: Research introduction

Chapter 2: Theoretical basis and research overview

Chapter 3: Research methodology

Chapter 4: Research results and discussion

Chapter 5: Conclusion and policy implications

CHAPTER 2. THEORETICAL BASIS AND RESEARCH OVERVIEW

2.1. Theoretical framework

2.1.1. Theory of competitiveness at the enterprise level

2.1.2. Theory of enterprise behavior

2.1.3. Agency cost theory

2.1.4. Transaction cost theory

2.2. Theoretical basis of banking market structure

2.2.1. The market

2.2.2. Banking market structure

2.2.3. The role of banking market structure in banking activities

2.2.3. The role of banking market structure in banking activities

2.2.4. Methods of measuring banking market structure

2.3. Theoretical basis of banking performance

2.3.1. Theoretical framework of efficiency

2.3.2. Concept of banking performance

2.3.3. Methods of measuring banking performance

There are two methods to evaluate the performance of commercial banks, which are the financial ratio method and the marginal efficiency analysis method. Accordingly, the financial ratio method is the most popular efficiency method in banking analysis, but the number of financial ratios can be very large and makes the interpretation of the results difficult (Das and Ghosh, 2006; Hughes and Mester, 2008; Wozniewska, 2008). For the marginal efficiency analysis method, there are two approaches: data envelopment analysis (DEA) and stochastic frontier analysis (SFA) (Fethi and Pasiouras, 2010). SFA is an alternative method to frontier estimation that assumes a given functional form for the relationship between inputs and outputs. As for DEA, it is a mathematical programming method to

estimate frontier functions and calculate efficiency estimates (Coelli et al., 2005). In the scope, the author uses the financial ratio method to evaluate the performance of commercial banks.

Financial ratio method: According to Wozniewska (2008), financial ratios are still important analytical tools used by bank owners and potential customers to compare and evaluate the performance of banks. That is why banks need to pay special attention to the value of traditional ratios if they want to create a positive image and be positively perceived by the public. Financial ratios allow us to analyze and interpret financial data, accounting information of banks and provide us with a deeper understanding of bank finance and help us evaluate the performance of banks. At the same time, financial ratios allow us to make comparisons between banks of different sizes (Vasil-iou and Frangouli, 2000)

According to Peter S. Rose and Sylvia C. Hudgins (2012), in theory, the market value of a stock is an indicator of the performance of a business because it represents the market's assessment of that business. However, this indicator is often unreliable in the banking sector because most bank stocks, especially stocks of small banks, are not actively traded in the domestic market as well as the international market. Therefore, financial analysts are forced to use profitability ratios to replace the market price index of stocks. Accordingly, profit is a financial indicator and the main measure to evaluate the performance of commercial banks. However, evaluating the performance of commercial banks based on financial indicators also has disadvantages because it contains potential errors because during the analysis process, financial experts have made some assumptions, such as assuming other factors do not change. Therefore, to avoid these errors and to have a more comprehensive view of the picture

of commercial banks' operations, financial analysts often calculate many different financial indicators, such as: ROA, ROE, NIM, NNIM, NOM, EPS. Each of these indicators considers a different aspect of profit. Net operating margin (NOM), net interest margin (NIM), and net noninterest margin (NNIM) are measures of efficiency as well as profitability, indicating how well management and employees can maintain revenue growth (primarily from loans, investments, and service fees) against rising expenses (primarily interest on deposits and other loans as well as employee salaries and benefits). Net interest margin measures the spread between interest revenue and the management of interest expenses that can be achieved by tightly controlling earning assets and pursuing the cheapest sources of funding. In contrast, the noninterest margin measures the amount of noninterest income from service fees that a financial firm can collect compared to the amount of noninterest expenses it incurs (including salaries, wages, repairs and maintenance of facilities, and loan loss expenses). Meanwhile, ROA is primarily an indicator of management efficiency; it shows how well management has converted assets into net income, and ROE is a measure of the rate of return that flows to shareholders. It approximates the net benefit that shareholders receive from investing capital in a financial company (i.e., putting their funds at risk in the hope of earning a suitable return). Also, according to Peter S. Rose and Sylvia C. Hudgins (2012), ROE and ROA are the two most popular measures of profitability used today, which are closely related to each other.

According to Gilbert & David (2007), ROA and ROE are two widely used indicators to evaluate the performance of companies, including commercial banks.

According to Gitman and Zutter (2012), profitability is used as an indicator to measure the performance of a bank, so the profitability measure at banks can use 2 indicators: ROA and ROE.

In the scope of the thesis, the author uses 2 indicators

2.4. Theoretical basis of Institutional quality

2.4.1. Concept of Institutional quality

2.4.2. The role of Institutional quality in banking performance

2.4.3. Method of measuring Institutional quality

2.5. Review of studies on the impact of market concentration on banking performance

Studies on the impact of market concentration on banking performance (HR) have produced mixed results. Some studies such as Silalahi et al. (2015), Sakti (2020), Kristína (2016), Talpur (2023), Hung Son Tran et al. (2023), and Hai Tuan Nguyen (2023) show that high levels of concentration (CR3, CR4, HHI) have a positive impact on HR, especially in the context of good institutions. In contrast, Ayadi & Ellouze (2013), Tarus & Cheruiyot (2015), Lartey et al. (2023), and Oyebola & Zayyad (2021) conclude that high concentration reduces competition, causes oligopoly, and reduces efficiency. Other studies such as Khan & Jan (2014) and Bikker & Haaf (2002) did not find a clear relationship. In Vietnam, Nguyen The Binh (2016), Hoang Thi Huyen (2017), Huynh Viet Khai et al. (2018), and Pham Hong Linh (2021) describe the changing competitive characteristics of the banking industry, but no monopoly has yet formed. Many recent studies emphasize the regulatory role of institutions in controlling the impact of concentration on the commercial banking performance

2.6. Review of studies on the impact of market power on banking performance

Reseach on banking market power has employed various methodologies such as Ordinary Least Squares (OLS), Fixed Effects Model (FEM), Random Effects Model (REM), System Generalized Method of Moments (GMM), System GMM (SGMM), and Panel-Corrected Standard Errors (PCSE). Commonly used measures include the Lerner Index, Boone Indicator, Herfindahl–Hirschman Index (HHI), and CR5 concentration ratio. Many scholars have asserted that market power has a positive impact on bank performance, notably Berger et al. (2009), Elfeituri (2022), Ariss (2010), Kasman & Kasman (2014), Pham Minh Dien et al. (2018), and Duong & Dang (2023). Conversely, Tan (2015, 2017), Nguyen Hoang Phong & Pham Thi Bich Duyen (2019), and Quynh & Anh (2023) reported a negative or nonlinear relationship between competition and banking performance. Other studies, such as those by Khan et al. (2016), Pham Thuy Tu & Dao Le Kieu Oanh (2021), and Do Thi Kim Thu & Mai Tuan Anh (2022), analyzed the dual role of market power in relation to monetary policy, technical efficiency, and financial stability. In summary, the impact of market power on bank performance varies across countries, depending on institutional quality, the level of market competition, and the development stage of the financial market.

2.7. Research gaps

Theoretical approaches remain fragmented, lacking integration between key frameworks such as Structure–Conduct–Performance (SCP), Market Power (MP), and Efficient Structure (ES). Moreover, the intermediary role of institutional quality has not been incorporated, nor has there been a comprehensive measurement of banking market structure that

simultaneously combines all three indicators: CRk, HHI, and Lerner Index.

Institutional factors—particularly indicators reflecting government effectiveness, regulatory quality, and rule of law—have not yet been integrated into the analytical models examining the relationship between market structure and bank performance, despite their significant impact in developing countries such as Vietnam. This constitutes a notable research gap in current studies on the linkage between market structure and the performance of Vietnamese commercial banks. Institutional quality is widely regarded as a foundational element shaping the legal and regulatory environment, influencing market conduct and the behavior of financial institutions. Especially in developing economies, institutional frameworks play a crucial role in either facilitating or hindering the development of the banking sector.

CHAPTER 3. RESEARCH METHODS

3.1. Research Hypotheses

Research hypotheses proposed for Model 1:

Hypothesis H1-1: The variable *CR4_Assets* have a positive impact on *ROA*.

This hypothesis assumes that as the asset market share of the four largest banks increases, the overall return on assets (ROA) of the banking system improves, since large banks can leverage economies of scale to enhance asset efficiency.

Hypothesis H1-2: The variable *CR4_Loans* have a positive impact on *ROA*.

It is assumed that loan concentration among the top four banks can improve performance due to their superior credit risk management capabilities and broader customer networks.

Hypothesis H1-3: The variable *CR4_Deposits* have a positive impact on *ROA*.

When deposit market share is concentrated in large banks, they can benefit from more stable and lower-cost funding sources, thereby increasing asset profitability.

Hypothesis H1-4: The variable *GE (Government Effectiveness)* has a positive impact on *ROA*.

Effective governance supports a stable legal environment, reduces operational risk, and improves banks' asset efficiency.

Hypothesis H1-5: The variable *RQ (Regulatory Quality)* has a positive impact on *ROA*.

Transparent and well-designed regulations guide banks toward effective strategies, optimize operations, and enhance asset performance.

Hypothesis H1-6: The variable *LR (Rule of Law)* has a positive impact on *ROA*.

A strongly enforced legal system and protected property rights reduce transaction costs and enhance financial efficiency.

Hypothesis H1-7: The variable *CR4_Assets* have a positive impact on *ROE*.

Large banks with a high share of total assets are better positioned to manage return on equity (ROE) through effective leverage strategies.

Hypothesis H1-8: The variable *CR4_Loans* have a positive impact on *ROE*.

Loan concentration enables banks to boost credit revenue and optimize returns on equity.

Hypothesis H1-9: The variable *CR4_Deposits* has a positive impact on *ROE*.

Access to a large and stable funding base allows banks to utilize equity more effectively for loan expansion, thereby increasing ROE.

Hypothesis H1-10: The variable *GE* has a positive impact on *ROE*.

Efficient governance creates favorable conditions for banking operations, thereby improving returns on equity.

Hypothesis H1-11: The variable *RQ* has a positive impact on *ROE*.

Sound Regulatory frameworks support financial policy stability, enhance risk control, and help maximize shareholder returns.

Hypothesis H1-12: The variable *LR* has a positive impact on *ROE*.

A trustworthy legal system strengthens market confidence, reduces risk, and supports banks in optimizing return on equity.

3.2. Research Model

Model 1: Measuring the impact of market concentration on the performance of Viet Namese commercial banks using the market concentration index CR4.

$$BP_{it} = \alpha + \beta_1 CR_4\_\text{Assets}_{it} + \beta_2 CR_4\_\text{Loans}_{it} + \beta_3 CR_4\_\text{Deposits}_{it} + \beta_4 \text{GE}_{it} + \beta_5 \text{RQ}_{it} + \beta_6 \text{LR}_{it} + +\beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model 2: Measuring the impact of market concentration on the performance of Viet Namese commercial banks using the market concentration index HHI.

$$BP_{it} = \alpha + \beta_1 HHI\_\text{Assets}_{it} + \beta_2 \text{HHI}_{it} + \beta_3 HHI_{it} + \beta_4 \text{GE}_{it} + \beta_5 \text{RQ}_{it} + \beta_6 \text{LR}_{it} + \beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model 3: Measuring the impact of market competition on the performance of Vietnamese commercial banks using the market power index Lerner.

$$BP_{it} = \alpha + \beta_1 Lerner_{it} + \beta_2 \text{GE}_{it} + \beta_3 \text{RQ}_{it} + \beta_4 \text{LR}_{it} + \beta_5 \text{LLP}_{it} + \beta_6 \text{Size}_{it} + \beta_7 \text{Inflation}_t + \beta_8 \text{GDP}_t + \mu_{it}$$

- The index **i** represents each commercial bank (**i = 1, 2, 3, ..., 24**).
- The index **t** represents the observation period (year).

- βj: The individual regression coefficients (j = 1...10).
- μit: The error term, normally distributed and varying with i and t.
- α: The intercept term.

Dependent Variable (BP): This variable represents the performance of Vietnamese commercial banks. The author uses two indicators, ROA and ROE, to measure the dependent variable.

Independent Variable:

- The CR4 and HHI variables assess the relationship between market concentration and ROA and ROE.
- The Lerner Index adds a perspective on market power and pricing ability, reflecting the competitive capability of banks.
- The variables GE, RQ, and LR provide a comprehensive view of how the regulatory environment supports or hinders bank performance.

Control Variable:

- LLP: Loan Loss Provision Ratio
- Size: Bank Size
- Inflation: Inflation Rate
- GDP: Economic Growth

CHAPTER 4. RESEARCH RESULTS AND DISCUSSION

4.1. Discussion of Research Results - Model 1

Regression results with SGMM (ROA, ROE) - Model 1

The impact of banking market structure, measured through three indicators—CR4_Assets, CR4_Deposits, and CR4_Loans—and institutional quality (GE, RQ, LR), on bank performance is examined using ROA and ROE as outcome variables. The System GMM (SGMM) estimation method is applied to address endogeneity and random errors in dynamic panel data. The regression results reveal that several variables are statistically significant at the 1%, 5%, or 10% levels, indicating clear effects on the performance of Vietnamese commercial banks.

Impact of Banking Market Structure: The three variables representing market concentration—CR4_Assets, CR4_Deposits, and CR4_Loans—exhibit differentiated effects on the two performance measures. For ROE, the coefficients of CR4_Assets (179.7446) and CR4_Deposits (245.2062) are both positive and statistically significant at the 1% level, suggesting that the concentration of assets and deposits in the four largest banks has a positive impact on return on equity, possibly due to economies of scale and more efficient capital utilization. In contrast, CR4_Loans has a large negative coefficient (-336.196), implying that excessive loan concentration in large banks may introduce higher credit risk or lead to inefficient competition, thereby reducing equity returns.

For ROA, the results are more mixed: CR4_Assets has a negative coefficient (-14.84526), significant at 1%, while CR4_Loans (9.745473) and CR4_Deposits (16.95001) are positive and significant at the 1% level. This suggests that asset efficiency improves when credit and deposit

markets are concentrated among large banks but declines when asset ownership becomes overly concentrated—potentially due to suboptimal asset utilization in large-scale institutions. The difference in signs and magnitudes between ROA and ROE indicates that market structure has heterogeneous effects on bank performance.

Impact of Institutional Quality: The three institutional variables—GE (Government Effectiveness), RQ (Regulatory Quality), and LR (Rule of Law)—exhibit opposing effects on ROA and ROE. The results show that as institutional quality improves, particularly in terms of government effectiveness and regulatory quality, ROE tends to decline. This may be attributed to higher compliance costs, stricter regulatory environments, or reduced opportunities for high-risk profit-seeking behavior. However, for ROA, the institutional variables show positive effects, implying that better institutions enhance operational efficiency and asset utilization due to improved transparency, reduced legal risk, and a more stable regulatory environment.

Impact of Control Variables: LLP (Loan Loss Provisions ratio) negatively affects both models, consistent with theory—higher provisioning typically reflects increased credit risk and reduced profitability. Size (Bank size) has a positive effect on ROE, suggesting that larger banks can better leverage capital, while it has a potentially negative effect on ROA, likely due to higher operating costs or less efficient asset allocation. Inflation: Controlled inflation supports higher ROE, though its effect on ROA is not significant. GDP growth: This result is particularly noteworthy—it suggests that in Vietnam, economic growth does not

necessarily translate into higher returns on equity, but it does positively support asset efficiency.

Conclusion: The model provides clear empirical evidence of the heterogeneous impacts of market structure and institutional quality on the performance of Vietnamese commercial banks. The divergence between ROA and ROE implies that regulatory policies, market oversight mechanisms, and institutional reforms should be flexibly designed, tailored to specific strategic goals—either to improve operational efficiency (ROA) or to enhance shareholder value (ROE).

4.2. Discussion of Research Results - Model 2

Assessment of the Impact of Market Concentration on the Performance of Vietnamese Commercial Banks

This section evaluates the impact of banking market concentration on the performance of Vietnamese commercial banks, using the Herfindahl-Hirschman Index (HHI) as a proxy for market structure. These indices reflect concentration levels based on the squared sum of market shares in assets, deposits, and loans. The SGMM regression results, using ROA and ROE as dependent variables, provide extended insights compared to the earlier model that employed CR4 indicators.

Impact of Banking Market Structure:

The variables HHI_Assets, HHI_Deposits, and HHI_Loans all show significant effects on bank performance, though with varying degrees and directions between ROA and ROE:

For ROE: HHI_Assets have a positive coefficient of 525.8194 (significant at the 1% level), HHI_Deposits has a positive coefficient of

1055.006 (1% level), suggesting that higher concentration in asset and deposit markets significantly enhances return on equity. This implies that leading banks can leverage their dominant positions to achieve higher financial returns. In contrast, HHI_Loans has a negative coefficient of -825.8136 (1% level), indicating that excessive loan concentration in a few large banks may deteriorate ROE, possibly due to unhealthy interest rate competition or credit risk arising from monopolistic lending behaviors.

For ROA: HHI_Assets has a positive coefficient of 42.85103 (1% level), HHI_Loans is 24.00114 (positive, 5% level),
suggesting that concentration in assets and lending contributes positively to asset utilization efficiency. Lower competition may allow banks to optimize operational scale and cost. HHI_Deposits, with a coefficient of 17.59518, is positive but statistically insignificant, indicating an unclear relationship between deposit concentration and ROA.

These results confirm that banking market structure significantly and differentially influences various aspects of performance, depending on the type of market concentration and the performance indicator used. In particular, the ROE findings highlight the risks associated with excessive loan concentration, suggesting a need for more stringent regulatory oversight by the State Bank of Vietnam.

Impact of Institutional Quality: The three institutional indicators—GE (Government Effectiveness), RQ (Regulatory Quality), and LR (Rule of Law)—continue to play important roles in the model: For ROE: GE is not statistically significant (coefficient: 0.134547), RQ shows a negative effect (-49.81189, 1% level), LR also has a negative coefficient (-6.907963, 5% level).

These results, consistent with earlier findings, indicate that a more stringent institutional environment, especially regarding regulatory quality and compliance, may reduce banks' return on equity—possibly due to higher compliance costs or reduced risk-taking opportunities.

For ROA: All institutional variables are positive and statistically significant: GE: 2.107617 (5% level), RQ: 3.469477 (1% level), LR: 0.8701221 (1% level). This indicates that stronger institutions enhance operational efficiency, helping banks better utilize their assets. Legal clarity, stable governance, and reasonable regulations promote asset efficiency, even if they do not necessarily translate into higher shareholder returns (ROE).

Impact of Control Variables: LLP (Loan Loss Provision ratio) has a significant negative effect on both models: ROE: -18.95549, ROA: -2.477649, consistent with theoretical expectations: higher provisioning reflects higher credit risk and reduces overall performance.

Size (Bank size): ROE: 7.893428 (positive), indicating economies of scale and enhanced capital mobilization, ROA: -0.3581174 (negative), suggesting that larger banks may experience higher management costs or less efficient asset utilization.

Inflation: Positively affects ROE, with no significant impact on ROA, indicating that stable inflation helps banks predict costs, improve pricing strategies, and enhance performance.

GDP (Economic growth): Has a negative impact on ROE, No significant effect on ROA. This suggests that while economic growth may support

internal operations, it does not immediately boost equity returns, possibly due to policy lags or risks associated with rapid growth.

Conclusion: The influence of market structure on bank performance is dual-faceted: while asset and deposit concentration tend to enhance ROE, loan concentration introduces risks and diminishes profit efficiency. On the other hand, strong institutional quality continues to play a positive role in improving operational efficiency (ROA) but may exert downward pressure on equity returns (ROE).

Therefore, policymakers should exercise caution when promoting competition in the credit market, monitor risks from dominant banks, and enhance institutional quality in a balanced manner—ensuring that efficiency gains do not come at the expense of systemic stability.

4.3. Discussion of Research Results - Model 3

The Lerner Index is employed as a proxy for the market power of each individual bank to examine the impact of market power on the performance of Vietnamese commercial banks. This model offers deeper insight into banks' micro-level characteristics, rather than focusing solely on industry-wide concentration measures such as CR4 or HHI. The SGMM regression results, using ROA and ROE as dependent variables, provide reliable empirical evidence and clarify the relationship between market power, institutional quality, and control variables in explaining bank performance.

Impact of Market Power (Lerner Index)

For ROA, the Lerner Index has a regression coefficient of 5.089304 (significant at the 1% level), indicating that greater market power helps

banks improve their asset utilization efficiency. This result is consistent with the market power hypothesis, which argues that banks with pricing ability above marginal cost can generate higher profits, thus improving ROA.

For ROE, the Lerner coefficient is even more substantial at 73.51971 (significant at the 1% level). This is a particularly striking result, showing that banks with strong market power can generate significantly higher returns on equity than weaker banks. The large disparity between the coefficients for ROE and ROA suggests that most of the benefits from market power accrue to financial performance (ROE), rather than solely to operational efficiency (ROA).

These findings strongly reinforce the positive role of banking market power in enhancing performance and imply that large banks with strong pricing power are more likely to benefit from their competitive advantages.

Impact of Institutional Quality

Institutional indicators continue to exhibit differentiated effects on the two types of performance measures:

For ROA: GE (Government Effectiveness) has a coefficient of -0.2147601 (significant at 5%), implying that high government effectiveness may be associated with tighter regulatory policies, which can reduce the ability to optimize asset efficiency.

RQ (Regulatory Quality) has a coefficient of 0.7811069 (1% level), and

LR (Rule of Law) has a coefficient of 0.5101906 (1% level),
both indicating that improved regulatory quality and legal frameworks contribute to more efficient asset utilization. This is empirical evidence supporting the assumption that a clear and transparent legal environment is a fundamental factor for enhancing bank operations.

For ROE:GE continues to have a significantly negative impact, with a coefficient of -13.25816 (1% level), indicating that strong government effectiveness may come with strict controls that negatively affect banks' return on equity. RQ is not statistically significant (coefficient: -1.705631), while LR is significant and positive (coefficient: 8.07205, 1% level), suggesting that strict legal compliance can help banks enhance credibility and reduce legal risks, thereby improving ROE.

Thus, while strong institutions consistently support ROA, their effects on ROE are not uniform. This underscores the dual nature of regulatory policy: legal frameworks improve operational efficiency, but macro-level control policies may constrain banks' ability to generate financial returns.

Impact of Control Variables

LLP (Loan Loss Provisions ratio): ROA: Coefficient = -0.0295452 (not statistically significant), possibly because provision levels are evenly regulated.

ROE: Coefficient = -2.738562 (1% level), showing that high provisioning continues to reduce return on equity, reflecting greater credit risk costs.

Size (Bank size): ROA: Coefficient = -0.0131158 (not significant), ROE: Coefficient = 2.982212 (1% level), indicating that larger banks benefit

financially in terms of equity returns, although this does not necessarily lead to more efficient asset usage.

Inflation: Positive and statistically significant effects on both ROA and ROE (1% level), suggesting that well-controlled inflation supports both operational efficiency and financial performance.

GDP (Economic Growth): Both ROA and ROE have negative coefficients (significant at 5% and 1%, respectively), indicating that economic growth does not necessarily align with improved bank performance, especially in the Vietnamese context where growth quality may be associated with credit risk or excess capital supply.

Conclusion

This model provides clear and policy-relevant empirical evidence regarding the role of bank-level market power in improving bank performance. Unlike models using HHI or CR4, which reflect industry-wide concentration, the Lerner Index focuses on the pricing power of individual banks. The findings suggest that market power is not detrimental; on the contrary, it enhances both ROA and ROE.

However, the results also reveal that factors such as government effectiveness or macroeconomic growth do not consistently generate positive impacts, particularly when the objective is to maximize profitability. Therefore, it is essential to balance institutional regulation, risk supervision, and the creation of a healthy market environment to fully leverage the competitive advantages of banks with dominant market shares.

CHAPTER 5. CONCLUSION AND POLICY IMPLICATIONS

5.1. Conclusion

The regression analysis results from the three models reveal several important conclusions, helping to clarify the relationship between market structure, institutional quality, and bank performance within the specific context of a developing transitional economy like Vietnam.

5.1.1. The Impact of Market Structure on Bank Performance

The variables representing market concentration using the traditional approach (CR4) show inconsistent effects across assets, deposit, and loan dimensions. Specifically:

CR4_Assets have a negative impact on ROA, indicating that concentrating assets in a few large banks does not necessarily lead to improved asset efficiency and may even reduce operational performance. This could stem from diseconomies of scale or a lack of innovation and agility among large banks.

In contrast, CR4_Deposits and CR4_Loans exhibit positive effects on ROA, suggesting that concentration of deposit and loan market shares among major banks may provide advantages in funding costs and credit expansion capabilities, thereby enhancing profitability.

However, when shifting to ROE as the dependent variable, the trends diverge. CR4_Assets and CR4_Deposits continue to exert positive effects, but CR4_Loans turns negative, implying that excessive concentration in lending may increase credit risk and negatively affect return on equity—a metric more sensitive to risk volatility and capital management policies.

For the HHI-based variables, which are calculated as the sum of squared market shares, the results appear more consistent:

HHI_Assets and HHI_Loans have positive effects on both ROA and ROE, emphasizing that when market concentration is moderate and more distributed across banks (not limited to the top four), competitive advantages may enable banks to enhance performance.

Meanwhile, HHI_Deposits does not show a statistically significant impact on ROA, suggesting that deposit mobilization advantages do not automatically translate into more efficient asset utilization. However, this variable does have a positive effect on ROE, highlighting the role of low funding costs in improving returns on equity.

The Lerner Index, representing market power from a behavioral perspective, shows a positive impact on both ROA and ROE. This finding supports the Market Power Hypothesis, which posits that banks able to price above marginal cost are better positioned to achieve higher profitability. It also reinforces the notion that measuring market structure should go beyond market share concentration and should incorporate pricing behavior and the degree of individual bank dominance.

5.1.2. The Role of Institutional Quality in Bank Performance

The Thesis used three institutional variables, namely GE (government efficiency), RQ (regulatory quality), and LR (rule of law), to test the impact on ROA and ROE.

GE has a positive impact on ROA in Models 1 and 2, but a negative impact on ROE in Models 1 and 3. This suggests that government efficiency contributes to a stable operating environment, promoting asset utilization (ROA), but at the same time can increase compliance costs, causing ROE to decline in the short run. Policy lags or banking system adjustment costs are also factors that need to be considered in this context.

RQ shows a positive impact on ROA in all three models, but a negative or insignificant impact on ROE. This is a notable finding, suggesting that regulatory quality improves internal performance and asset performance, but does not translate into return on equity due to high compliance costs or inconsistent policy implementation. LR maintains a positive and statistically significant impact on both ROA and ROE in most models, emphasizing that regulatory compliance not only reduces regulatory risk but also enhances investor and customer confidence – thereby improving overall commercial bank performance.

5.1.3. The Impact of Control of Variables

The control variables also yield several noteworthy findings:

LLP (Loan Loss Provision ratio) shows a positive effect on ROA but a negative effect on ROE, implying that provisioning helps protect asset efficiency, yet reduces accounting profitability on equity in the short term.

Size (bank size) exhibits inconsistent effects: negative on ROA, but positive on ROE in some models. This suggests that large banks may not necessarily optimize asset utilization, but they do benefit from lower capital costs and better access to capital markets, thereby improving return on equity.

Inflation has a positive impact on both ROA and ROE in most models, if it remains under control. This indicates that in a low-to-moderate inflation environment, rising credit demand can boost bank profitability. However, caution is warranted when inflation exceeds safe thresholds. GDP (economic growth) shows a negative effect on both ROA and ROE, which contradicts theoretical expectations. This may be due to the characteristics of Vietnam's economy, where rapid growth is sometimes

accompanied by increased credit risk and instability in asset quality within the banking sector.

5.2 Policy Implications

5.2.1. Policy implications for Vietnamese commercial banks

Based on the research findings and aiming to improve the operations of Vietnamese commercial banks: Managing asset, deposit, and credit concentration – Recommendations:

- Strengthen asset management systems by applying technology and Big Data analytics to manage asset portfolios more effectively and minimize risks from asset concentration.
- Deposit mobilization should be accompanied by improved capital utilization strategies, focusing on high yield but secure loans and investment portfolios with reasonable returns.

Focus on pricing capabilities and optimizing market power:

- The Lerner Index demonstrates that market power has a positive effect on both ROA and ROE, reflecting that the pricing ability of large banks enhances profitability.
- Recommendations: Develop flexibly priced financial products based on customer data analytics and market conditions to optimize profits; encourage the development of value-added services such as digital banking and personalized financial advisories to strengthen pricing capabilities and attract customers.

Enhance risk management and compliance capacity:

(i) Develop a flexible compliance management system, leveraging

technologies like RegTech (Regulatory Technology) to reduce costs and improve compliance efficiency.

(ii) Invest in training in-house legal experts to reduce reliance on external advisory services and lower operating expenses.

(iii) Work closely with regulatory authorities to ensure that new regulations do not impose unnecessary burdens on banks.

Optimize credit risk provisioning and manage bank size

Leverage inflation opportunities and mitigate macroeconomic risks

Develop sustainable growth strategies and foster innovation

In summary, Vietnamese commercial banks should leverage their advantages in scale, market power, and stable inflation, while simultaneously strengthening credit risk management, and focusing on efficient asset and credit governance strategies. Investment in technology and sustainable development will be key to improving performance and ensuring long-term financial stability.

5.2.2. Policy Implications for the State Bank of Vietnam

Based on the study's findings regarding the impact of market concentration, market power, institutional quality, and macroeconomic factors on the performance (ROA and ROE) of Vietnamese commercial banks, several policy implications are proposed. As the supervisory and regulatory authority of the financial system, the State Bank of Vietnam (SBV) should implement targeted measures to ensure stability, sustainability, and efficient development of the banking sector:

- Control market concentration to mitigate systemic risk
- Enhance the legal framework and institutional quality oversight

- Strengthening credit risk and provisioning management
- Monitor bank size to ensure operational efficiency
- Stabilize the macroeconomic environment and inflation
- Promote healthy competition and foster innovation

5.3. Limitations of the study and future research directions

5.3.1. Limitations of the study

Although this dissertation employed a comprehensive research model to assess the impact of market structure and institutional quality on the performance of Vietnamese commercial banks, certain limitations remain:

1. The study only uses three WGI indicators (GE, RQ, LR) to represent institutional quality, while the WGI framework includes six components. Although the chosen indicators are theoretically justified, important aspects such as control of corruption or political stability may have been omitted.

2. Institutional data is obtained from national-level WGI scores, which do not capture regional differences in institutional environments across provinces and cities—especially relevant given that banking activities are often concentrated in key economic zones.

3. The study relies on quantitative indicators such as CR4, HHI, and Lerner to measure market structure but does not account for non-price competition factors such as product innovation, digital transformation, or service quality.

4. While the SGMM model is effective for addressing endogeneity, it does not clearly capture nonlinear relationships or indirect effects via mediating variables.

The study period of 2011–2022 may not fully reflect the impact of major economic shocks such as COVID-19, interest rate volatility, or the global supply chain crisis.

5.3.2. Future research directions

Based on the limitations mentioned above, the author proposes several directions for future research:

First, institutional measurement should be expanded by including all six WGI indicators or by integrating additional indices such as the Global Competitiveness Index (GCI) and the Doing Business Index.

Second, institutional data should be collected at the provincial or city level (e.g., Provincial Competitiveness Index – PCI) to better reflect regional disparities.

Third, future studies should incorporate behavioral variables, such as levels of technological innovation, digitalization of services, and customer satisfaction assessments.

Fourth, upcoming models should include interaction analysis between key factors (e.g., institutional quality and market structure; bank size and regulatory policy).

Fifth, researchers should consider applying advanced methods such as Structural Equation Modeling (SEM), nonlinear approaches, or machine learning techniques.

Sixth, the research could be extended to include comparative studies across ASEAN countries or other developing economies, to derive more applicable and context-relevant policy lessons.