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IMPACT OF BANKING MARKET STRUCTURE ON THE PERFORMANCE OF VIETNAMESE COMMERCIAL BANK

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CHAPTER 1. RESEARCH INTRODUCTION

1.1. Rationale for the Research Topic

Banking market structure, expressed through the degree of market concentration and market power in the banking industry (Dickson, 1981; Marfels, 1971), is a key factor that drives bank performance. It is a fundamental element that shapes the transmission mechanism of monetary policy and systemic risk. The central bank must consider these factors when choosing instruments for monetary policy and macroprudential regulation (Begg, 2005; Peter S. Rose and Sylvia C. Hudgins, 2012).

In the context of economic globalization, the banking sector faces many risks. Financial crises create instability for the banking system. Commercial banks pay strong attention to their performance and to improving their competitiveness. They assess the level of market concentration and the degree of market power through the banking market structure. Since the global financial crisis in 2008, many theoretical and empirical studies have examined the impact of banking market structure on bank performance. Classical theories such as the Market Power Hypothesis and the Efficient Structure Hypothesis, together with the Structure Conduct Performance SCP model and the Market Power versus Efficient Structure MP ES framework, provide the main theoretical basis to explain the relationship between banking market structure and bank performance. However, empirical results worldwide are still mixed. Some studies support a positive impact of market concentration on bank

performance (Berger and Hannan, 1998; Silalahi et al., 2015; Sakti, 2020). Other studies argue that high concentration reduces competition, increases costs and has a negative effect on bank performance (Tarus and Cheruiyot, 2015; Oyebola and Zayyad, 2021).

In Viet Nam, after the country joined the WTO in 2007, entry barriers in the banking sector were removed. At the same time, the strong growth of financial service providers based on advanced technology, especially Fintech companies, has pushed Vietnamese commercial banks into intense competition. Vietnamese banks now compete with one another, with foreign commercial banks and with Fintech firms. According to data from the State Bank of Viet Nam, by the end of 2022 there were 12 wholly owned foreign banks with total assets of 2,071,475 billion VND, an increase of 6.34 % compared with 2020. Financial statements of commercial banks show that in 2022 the four large banks Vietcombank, BIDV, VietinBank and Agribank accounted for 54.99 % of total assets, 61.83 % of total deposits and 56.80 % of total loans in the Vietnamese banking system. Previous studies give different conclusions on the market power of Vietnamese commercial banks (Nguyen The Binh, 2016; Huynh Viet Khai et al., 2018; Pham Hong Linh, 2021; Pham Minh Dien et al., 2018). Pham Minh Dien et al. (2018) studied commercial banks in the period 2011 to 2015 and find that market power has a positive effect on the net interest margin, while market concentration does not affect the net interest margin.

In addition, an appropriate institutional framework creates incentives, while an inappropriate framework constrains the development of a country in general and the banking sector in particular (North, 1990). In emerging economies, high institutional quality can prevent banks from taking excessive risk when banking market power is high. It can reduce the impact of market power on bank stability (Hai Tuan Nguyen, 2023; Hung Son Tran et al., 2023). Oyebola and Zayyad (2021) argue that market concentration and institutional quality reduce bank capital ratios in 24 African countries. In Viet Nam, a review of previous studies on the impact of banking market structure on the performance of commercial banks shows that most studies have not considered the role of institutional quality.

From these theoretical and practical requirements, and by building on and addressing the limitations of previous studies, the author conducts the research titled "The Impact of Banking Market Structure on the Performance of Vietnamese Commercial Banks". The study aims to answer several key questions. First, it constructs indicators that characterize the banking market structure. Second, it examines whether market structure affects the performance of Vietnamese commercial banks and whether this effect is positive or negative. Third, it explains how changes in institutional factors, measured by the indicators Government Effectiveness GE, Regulatory Quality RQ and Rule of Law LR, influence the competitive behaviour of banks and whether they

moderate the impact of banking market structure on the performance of commercial banks

1.2 Research Objectives and Research Questions

1.2.1 General Research Objective

The general research objective of this dissertation is to assess the impact of banking market structure on the performance of Vietnamese commercial banks, and to assess the impact of institutional quality on the relationship between banking market structure and the performance of Vietnamese commercial banks.

1.2.2 Specific Research Objectives

From the general research objective, the dissertation sets out the following specific objectives:

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

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

Third, to examine the moderating role 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 above specific research objectives, the dissertation focuses on the following research questions:

First question: How does the level of banking market concentration affect the performance of Vietnamese commercial banks?

Second question: How does banking market power affect the performance of Vietnamese commercial banks?

Third question: In the relationship between banking market structure and the performance of Vietnamese commercial banks, what role does institutional quality play for the performance of Vietnamese commercial banks?

1.3. Research Subjects and Scope

1.3.1. Research Subjects

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

1.3.2. Research Scope

The author focuses on analysing the criteria used to assess banking market structure, such as the degree of banking market concentration and banking market power. The study uses a sample of 26 Vietnamese commercial banks in the period from 2009 to 2022, together with Vietnamese institutional quality data for the period 2009 to 2022. The author selects the sample of 26 Vietnamese commercial banks because these banks have

full data for the research period 2009 to 2022. The list of 26 banks is presented in Appendix 1. The 26 Vietnamese commercial banks account for 84 % of the 31 Vietnamese commercial banks as at 30 June 2024 (State Bank of Viet Nam, 2024). This research sample is therefore representative of the Vietnamese commercial banking system. The sample does not include joint venture banks and foreign commercial banks in Viet Nam because of heterogeneity in business model and governance structure, as well as differences in regulations and disclosure requirements. The research data are taken from the audited consolidated financial statements of the 26 Vietnamese commercial banks and from statistical data of the International Monetary Fund IMF and the World Bank.

1.4 Research methods

The main research method of the dissertation is a combination of qualitative and quantitative approaches. The qualitative approach is used to build the theoretical foundation, the analytical framework and the proposed research model. The quantitative approach is used to measure variables, to estimate the models and to test the hypotheses.

For the qualitative approach, the dissertation uses literature review, description, analysis, synthesis and comparison. The study systematises the theoretical foundation on banking market structure, market power, the Structure Conduct Performance view, the Market Power Hypothesis, the Efficient Structure Hypothesis and the role of institutional quality in banking activity.

The dissertation reviews, classifies and compares empirical studies in Viet Nam and in other countries on the relationship between market concentration, market power, institutional quality and bank performance. It also analyses the context of economic development and the restructuring process of the Vietnamese commercial banking system, the requirements of integration and the adoption of international prudential standards. On that basis, the study clarifies the research motivation. It then synthesises the results and limitations of previous studies, identifies the research gap, defines the research objectives and questions, and develops the research model, the variables and the hypotheses to be tested.

For the quantitative approach, the dissertation applies the following methods.

First, it measures the research variables. Bank performance is measured by ROA and ROE, which are calculated from audited financial statements and annual reports of the banks. Market concentration is measured by the concentration indices CR4 and HHI for three dimensions, namely assets, deposits and loans. Market power is measured by the Lerner index, which reflects the gap between output price and marginal cost and is calculated from bank income and cost data. Institutional quality is measured by indicators from the Worldwide Governance Indicators of the World Bank, including Government Effectiveness GE, Regulatory Quality RQ and Rule of Law LR. Control variables include the loan loss provision ratio LLP, bank size, GDP

growth and inflation. In the estimated models, the concentration indices and the Lerner index are transformed into natural logarithms to normalise the scale and to reduce the effect of extreme values.

Second, the study runs regressions on panel data to identify the factors that affect bank performance. The main estimation method is System GMM based on the Arellano Bond approach with two step estimation. This method allows the use of lagged values of the dependent variable and endogenous variables as instruments, and it deals with endogeneity, heteroskedasticity and autocorrelation in panel data.

Third, the study performs robustness checks of the model. It tests first order and second order autocorrelation in the residuals and uses the Hansen test and the Sargan test to assess the validity of the instrument set. It changes the lag length and the instrument structure, and it successively uses the groups of indices CR4, HHI and Lerner in different model specifications to examine the stability of the estimation results.

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:

First, the dissertation develops an integrated empirical framework with 24 System GMM models. These models combine three groups of factors at the same time, namely the degree of banking market concentration, internal market power, bank performance and institutional quality, within a single dynamic model framework. This approach allows

a consistent description of how market structure and pricing power affect the performance of Vietnamese commercial banks under institutional regulation. At the same time, it controls endogeneity, the dynamics of ROA and ROE, and key macroeconomic factors. This is a significant step forward compared with many previous studies that consider only separate groups of factors or rely on static models.

Second, the dissertation provides detailed empirical evidence on the different impacts of market concentration across three functional dimensions, namely assets, deposits and loans. Instead of using only one aggregate CR4 or HHI index, the dissertation constructs and estimates concentration measures for three channels at the same time, including lnCR4_Assets, lnCR4_Deposits, lnCR4_Loans, lnHHI_Assets, lnHHI_Deposits and lnHHI_Loans. The results show that the impact of market concentration is not homogeneous across dimensions. Higher concentration in deposits and, to some extent, in assets tends to increase bank performance, while higher concentration in loans tends to reduce performance, especially with respect to ROE. This channel-based approach clarifies the segmented competitive structure of the Vietnamese banking system and adds a new perspective to both theory and empirics on the relationship between market concentration and bank performance.

Third, the dissertation clarifies the moderating role of institutional quality in the relationship between market concentration, market power and bank performance, by using three components of institutional quality at the same time, namely government effectiveness

GE, rule of law LR and regulatory quality RQ. Through interaction terms between CR4, HHI, Lerner and GE, LR, RQ, the dissertation shows that institutions not only change the magnitude of the effects but also change their direction and the transmission channels from market structure and market power to the performance of commercial banks. In particular, the results indicate that good institutions can amplify the benefits of concentration in assets and deposits, highlight the risks of concentration in loans, and at the same time both limit the conversion of market power into profit on assets and guide that power toward optimising the return on equity. The clear difference between ROA and ROE in their interaction with the Lerner index and institutional indicators is a new contribution compared with most international studies, which often consider the role of institutions in a more general way and rarely distinguish between different measures of performance.

Fourth, the dissertation clarifies the role of the specific features of the Vietnamese market in the transmission mechanism from market structure, market power and institutions to bank performance. In doing so, it adds new evidence to the international academic debate on banking competition in emerging economies. The Vietnamese context, with the restructuring of the banking system, the resolution of nonperforming loans, digital transformation and improvements in the institutional framework, is embedded in the interpretation of the empirical results. The findings show that bank performance is jointly determined by three linked mechanisms, namely dimension specific concentration, pricing power

and institutional quality. The dissertation shows that market concentration is beneficial only in certain low risk dimensions, that market power has a clear positive impact on the return on equity, and that institutional quality is the central factor shaping these effects. This creates a meaningful contribution in terms of theory, methodology and empirical evidence, and opens a platform for further research on banking market structure, bank performance and institutions in the context of developing economies.

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 dissertation provides detailed quantitative evidence to reassess the structure of the Vietnamese banking market by separate dimensions of assets, deposits and credit. The joint use of the indicators lnCR4_Assets, lnCR4_Deposits, lnCR4_Loans, lnHHI_Assets, lnHHI_Deposits and lnHHI_Loans makes it possible to identify clearly the segmentation of the market by funding, asset management and lending channels. It also shows that concentration in deposits and partly in assets can support better performance, while concentration in credit reduces performance. This provides an empirical basis for each bank to adjust its business strategy by dimensional assets, lending and funding and to choose competitive objectives that fit its own advantages. It also helps regulators to design a market structure management orientation that is

closer to actual conditions rather than relying only on aggregate concentration indices.

Second, the dissertation provides direct empirical evidence for the design of competition policy and risk supervision policy based on credit concentration and market power. The results show that high credit concentration is associated with lower performance, especially for the return on equity and in the context of improved institutions, while the Lerner index has a clear positive effect on ROE. This helps the State Bank and regulators to have more grounds to design tools to monitor credit concentration and to limit systemic risk coming from a few banks or sectors with high credit concentration. At the same time, they can use market power indicators such as the Lerner index to detect early the group of banks with strong pricing power that need close supervision in terms of interest rates, fees and competitive behaviour. This evidence supports a gradual move toward supervision that is oriented by risk, combining concentration indicators and market power indicators.

Third, the dissertation clarifies the central role of institutional quality in shaping the impact of market structure and market power on bank performance and thereby provides practical directions for institutional reform in the financial and banking sector. The quantification of the impact of GE, LR and RQ in the interaction terms shows that better institutions not only amplify the benefits of concentration in assets and deposits but also reveal and highlight more clearly the risks of

concentration in credit. At the same time, they adjust the transmission channel of market power from profit on assets toward the efficiency of equity capital. This helps the State Bank and policy makers to identify clearly the reform priorities, such as improving the effectiveness of public governance, strengthening the rule of law, improving the quality and enforcement of regulations, completing the framework for performing loan resolution, protecting creditor rights and increasing transparency of information. In this way, institutional reform is seen not only as a long-term goal but also as an active tool to manage the impact of market structure and competition on performance and system stability.

Fourth, for commercial banks themselves, the dissertation provides concrete practical suggestions for governance and sustainable development strategies. The results emphasise that size, dimension specific concentration structure, market power and the ability to comply with institutions are key factors that determine long term performance. Based on this, banks can use concentration indicators by business line and the Lerner index as an internal set of indicators to review their funding strategy, lending strategy, equity management and technology investment. At the same time, they can adjust risk appetite, provisioning policy and the level of compliance with international standards such as Basel II, Basel III and financial reporting standards. This helps banks to build growth strategies that move from a focus on pure scale expansion to a focus on efficiency, safety and the ability to adapt to a changing institutional environment.

In summary, the dissertation has high practical application value for commercial banks, the State Bank of Viet Nam and policy makers by providing a systematic body of empirical evidence on the impact of market structure, market power and institutional quality on bank performance. The research results can be used as a reference in the process of restructuring the banking system, improving the institutional framework, designing supervisory tools and planning strategies for the development of the Vietnamese banking sector in the coming period.

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 Basis

2.1.1. Theory of Competitive Advantage at the Firm Level

2.1.2. Theory of Firm Behavior

2.1.3. Agency Cost Theory

2.1.4. Transaction Cost Theory

2.1.5. Banking Market Structure

2.1.6. Concept of Bank Performance Efficiency

2.1.7. Concept of Institutions

2.1.8. Concept of Institutional Quality

2.2 Measurement Methods and Techniques

2.2.1. Methods and Techniques for Measuring Banking Market Structure

Building on the empirical results and on the theory of banking market structure, the author develops techniques to measure market structure and the degree of banking competition.

According to Rosse and Panzar (1977) and Panzar and Rosse (1987), these authors build models and measures for monopoly, perfect competition and monopolistic competition, and develop a test to distinguish between these market forms. By combining the theoretical foundation of the structural approach that originates from Mason (1939) and Bain (1956) with the nonstructural approach, the author constructs **a**

set of indicators to measure banking market structure in general and in Viet Nam in particular.

Building empirical results and the theoretical foundation, the author provides arguments to develop a set of market structure indicators in this dissertation in a scientific, comprehensive and accurate way.

Nonstructural approach:

First, the method of Panzar and Rosse (1987) is used in many empirical studies on competition in banking because it is simple to calculate and uses data that are easy to obtain. The H statistics are used to identify the competitive conditions in an industry, such as perfect competition, monopolistic competition and monopoly. The strength of this index is that it can be used in both short run and long run equilibrium. Therefore, the H statistics have been widely used by scholars when studying market structure.

Second, the method proposed by Lerner (1934) is used by many scholars in empirical research to measure market power and to measure banking competition.

The Lerner index captures the essence of market power. It measures the difference between the output price and the marginal cost. The Lerner index is calculated as follows (Lerner, A P, 1934):

$$\text{Lerner}_{it} = \frac{P_{it} - MC_{it}}{P_{it}}$$

The Lerner index takes values from 0 to 1. A value of 0 indicates perfect competition. A value of 1 indicates monopoly.

Where:

I denote the bank and denote time.

P is the output price, calculated as total revenue divided by total assets (Fernandez et al., 2005; Carbo Valverde et al., 2009).

MC is the marginal cost of the bank, which cannot be observed directly. MC is estimated from the total cost function (Tan and Floros, 2013; Kasman and Carvallo, 2014; Fu et al., 2014). MC is estimated to use a two-step procedure as follows.

Structural approach:

Building on the theoretical framework of market structure and the Structure Conduct Performance (SCP) theory developed from the classical industrial organization model of Mason (1939) and Bain (1956) and combining the specific features of the banking sector in Tirole (1988), the banking market is most often described as an oligopoly.

In addition, the degree of concentration also reflects changes that come from new banks entering the group, entering the market, banks leaving the market, leaving the group, or from bank mergers (Bikker and Haaf, 2002a).

Bikker and Haaf (2002a, 2002b) argue that a higher degree of concentration can reduce competitive pressure but at the same time allows large banks to exploit economies of scale.

Dickson (1981) and Marfels (1971) use a structural approach to measure market structure. They use market concentration indices such as the concentration ratio CR and the Herfindahl Hirschman Index HHI. The HHI index was proposed by Hirschman (1964).

Bikker and Haaf (2002a) introduce ten measures to capture the degree of concentration and competition in the banking market. They argue that the choice of concentration measure mainly depends on how policy makers view the relative impact on competition between large and small banks. In practice, the HHI and the bank concentration ratio CRk are the most used measures, both in theory and in applied work. When these indices are applied to many banking markets in different countries, they tend to give almost the same ranking. This increases the practical relevance of HHI and CRk.

The CR index is calculated as follows:

$$CR_k = \sum_{i=1}^{k} S_i$$

CR_k: is the k bank concentration ratio.

S_i is the market share of bank i.

k is the number of banks in the group.

In practice, this index is usually applied to three or more banks with the largest total assets, depending on the market size and whether a few large banks control the market. The concentration ratio ranges from 0 % to 100 %. The higher the ratio, the higher the market concentration, and market

power is more concentrated in that group of banks (Bikker and Haaf, 2002a; Khan et al., 2016).

The HHI index is calculated as follows

$$HHI = \sum_{i=1}^{n} S_i^2$$

+ S_i: is the market share of bank i.

+ n is the number of banks in the system.

The value of the HHI lies in the interval from 0 to 1.

- A smaller HHI (close to 0) indicates a less concentrated market and a situation close to perfect competition.
- An HHI greater than 0.18 indicates a highly concentrated market with a tendency toward monopoly (Florian, 2014).
- An HHI lower than 0.1 indicates a competitive market (Khan et al., 2016).

In the analysis of banking market structure, three common indices are often used to assess the degree of concentration and market power, namely the CR4 concentration ratio, the Herfindahl Hirschman Index HHI and the Lerner index.

Based on the arguments above, the author uses CR4, HHI and the Lerner index as measures of banking market structure. CR4 and HHI represent market structure through market concentration. The Lerner index represents market structure through market power.

2.2.2 Methods for measuring Institutional quality

Measuring a country's institutions is difficult because the concept of institutions is quite abstract. There are many indicators for institutions, but the Worldwide Governance Indicators (WGI) of the World Bank are widely used because they are comprehensive. The World Bank introduced WGI in 1996 and has updated it every year since 2002. Based on information from more than 30 data providers and nearly 40 data sources, this indicator evaluates the quality of governance and institutions in more than 200 countries.

According to the World Bank (2014), WGI reflects the process by which governments are selected, monitored and replaced, the capacity of the government to formulate and implement policies, and the respect of citizens and the state for the institutions that govern social interactions. WGI plays the role of a powerful tool to assess the quality of institutions across countries. Developed by Kaufmann et al. (2010), WGI provides a comprehensive framework to analyse the institutional environment, which is very important for understanding how governance structures affect economic and social outcomes.

Institutions, including formal and informal rules that govern interactions in a society, play a key role in shaping economic development, policy effectiveness and overall stability. Institutions are fundamental for a country's development because they set the rules of the game for economic and social interactions. WGI measures the strength and performance of these institutions through six main dimensions: (i) Voice and Accountability (VA); (ii) Political Stability and Absence of

Violence or Terrorism (PS); (iii) Government Effectiveness (GE); (iv) Regulatory Quality (RQ); (v) Rule of Law (LR); and (vi) Control of Corruption (CC).

These six indicators are evaluated on a scale from −2.5 to 2.5. Higher scores mean better institutional quality. In other words, the higher the value on this scale, the higher the institutional quality.

2.2.3 Methods for measuring bank performance

There are two main methods to assess the performance of commercial banks, namely the financial ratio method and the frontier efficiency analysis method. The financial ratio method is the most widely used and practical analytical tool in banking, but the number of possible financial ratios can be very large, which can make it difficult to interpret the results (Das and Ghosh, 2006; Hughes and Mester, 2008; Wozniewska, 2008).

For frontier efficiency analysis, there are two main approaches, data envelopment analysis (DEA) and stochastic frontier analysis (SFA) (Fethi and Pasiouras, 2010). SFA is an alternative frontier estimation technique that assumes a given functional form for the relationship between inputs and outputs. DEA is a mathematical programming method that estimates frontier functions and computes efficiency scores (Coelli et al., 2005).

Within the scope of this study, the author uses the financial ratio method to evaluate the performance of commercial banks.

Financial ratio method

According to Wozniewska (2008), financial ratios remain an important analytical tool used by bank owners and potential customers to compare and assess bank performance. This is why banks must pay special attention to the values of traditional ratios if they want to build a positive image and be perceived favourably by the public.

Financial ratios allow us to analyse and interpret financial data and accounting information of banks. They provide deeper insight into bank finance and help us evaluate bank performance. 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 bank's shares is the best indicator of its performance because it reflects how the market evaluates the bank. However, this indicator is often not reliable in banking, because most bank shares, especially those of small banks, are not actively traded in domestic or international markets. Therefore, financial analysts are forced to use profitability ratios instead of the share price as a measure of performance.

Profit is a financial indicator and is the main measure used to evaluate the performance of commercial banks. However, assessing performance based on a single profit indicator also has limitations, because the analysis may contain potential errors caused by simplifying assumptions, such as assuming that other factors remain unchanged. To avoid these problems and to obtain a more comprehensive picture of bank

activities, financial analysts usually calculate several different financial ratios, such as ROA, ROE, NIM, NNIM, NOM and EPS. Each ratio captures a different aspect of profitability.

Net operating margin (NOM), net interest margin (NIM) and net noninterest margin (NNIM) are measures of both efficiency and profitability. They show how well management and staff can maintain revenue growth mainly from loans, investments and fee based services compared with rising costs mainly from interest on deposits and other borrowings and from salaries and staff benefits. Net interest margin measures the spread between interest income and interest expense that can be achieved through tight control of earning assets and the use of the cheapest possible funding sources. In contrast, net noninterest margin measures the net amount of noninterest income from fees and services that a financial firm earns relative to its noninterest expenses, including salaries and wages, repair and maintenance of facilities and losses on loans.

ROA is mainly a measure of management efficiency. It shows how well management has converted assets into net income. ROE measures the rate of return that flows to shareholders. It approximates the net benefit that shareholders receive from investing their capital in the financial firm, that is, from putting their funds at risk in the hope of earning an appropriate return. Peter S. Rose and Sylvia C. Hudgins (2012) also state that ROE and ROA are the two most common profitability measures used today and that they are closely related to each other.

According to Gilbert and David (2007), ROA and ROE are widely used to assess the performance of firms, including commercial banks. Gitman and Zutter (2012) also argue that profitability is a key measure of bank performance and that ROA and ROE can be used as profitability indicators in banking.

In this dissertation, the author uses ROA and ROE as the two main indicators to measure the performance of commercial banks.

2.3 Theoretical framework on the role of market structure for the performance of commercial banks

2.3.1 The role of banking market structure for bank operations

2.3.2 Bank performance and the role of market structure for bank performance

2.4 Institutions as a moderating factor in the impact of market structure on the performance of commercial banks

2.5 Review of related previous studies

2.5.1 Studies on the impact of market concentration on bank performance

2.5.2 Studies on the impact of market power on bank performance

2.5.3 Studies on the role of institutional quality in the relationship between banking market structure and bank performance

2.6 Remarks and analysis of the research gap

2.6.1 Remarks on the research gap

2.6.2 Research gap

First, previous studies usually use only one or two indicators from the groups CRk, HHI or Lerner. As a result, they only reflect separate slices of banking market structure. In the Vietnamese context, there is still no study that builds a full set of indicators including CR4, HHI and Lerner within a single empirical research program in order to measure both market concentration and bank pricing power in a comprehensive way.

Second, the theoretical approaches are still fragmented. Many studies rely only on the Structure Conduct Performance (SCP) framework, or only emphasise the Market Power Hypothesis, or only use the Efficient Structure Hypothesis. The role of institutional quality appears only in a scattered way and mainly as a direct explanatory variable. There is no study that develops an integrated theoretical framework in which market structure, market power, bank performance and institutional quality are considered at the same time and are closely linked to each other.

Third, although institutional quality is recognised as a fundamental factor in developing countries, it is rarely integrated in a systematic way into models of the interaction between market structure and bank performance. In particular, the pillars that reflect government effectiveness, regulatory quality and the rule of law have not yet been used as moderating variables in the relationship between CR4, HHI, Lerner and the performance of Vietnamese commercial banks.

CHAPTER 3. RESEARCH METHODS

3.1. Research Hypotheses

Hypothesis H1: Market concentration, measured by CR4 and HHI, has a positive effect on the performance of Vietnamese commercial banks.

Hypothesis H1 is developed to answer the first research question of the dissertation: “How does market concentration affect the performance of Vietnamese commercial banks”

The specific research arguments for H1 are as follows.

When market concentration measured by CR4 increases, the four leading banks usually obtain a more favorable interest margin and a more stable funding base. This improves return on assets. According to Porter’s theory of firm level competitiveness, productivity is the core of performance. Leading firms tend to invest heavily in technology, operating processes, risk management and customer data. As a result, average costs decrease and profit margins increase.

From the perspective of the theory of the firm by Cyert and March, a concentrated market structure makes it easier to form stable decision rules and to reduce operating uncertainty. This helps internal units to coordinate more effectively in order to achieve satisfactory profit targets, which raises net income over total assets.

The agency cost theory of Jensen and Meckling reminds us that market power can create distortions when managers pursue their own interests. However, when the institutional framework and competitive discipline are transparent enough, internal and external monitoring mechanisms

limit discretionary spending and encourage the optimal choice of the asset portfolio.

According to the transaction cost economics of Coase (1960) and Williamson (2000), large banks have better screening and monitoring capacity for credit, more standardised contracts and more automated processing. Therefore, transaction costs and expected credit losses fall.

These channels operate clearly in the three components of CR4. CR4 for assets reflects an advantage in allocating and using assets at a low operating cost. CR4 for loans reflects the ability to price risk and manage the portfolio in a way that reduces provisioning costs. CR4 for deposits reflects a cheap and stable funding base that supports a strong net interest margin. Combining the mechanisms of the four theories, a reasonable expectation is that ROA increases with CR4 in the context of market discipline and effective supervisory institutions.

Hypothesis H2: Market power measured by the Lerner index has a positive effect on the performance of Vietnamese commercial banks.

Hypothesis H2 is developed to answer the second research question of the dissertation: “How does market power affect the performance of Vietnamese commercial banks”

The specific research arguments for H2 are as follows.

From a measurement perspective, the Lerner index reflects the gap between output price and marginal cost. A higher Lerner index means stronger pricing power and a wider profit margin on each unit of assets. This increases ROA. According to the theory of firm level

competitiveness of Porter, market advantage allows a bank to maintain a high net interest margin through better risk based pricing and lower funding costs supported by brand strength and a high level of current account and savings account deposits. At the same time, it can expand noninterest income from service fees, payments and bancassurance. As a result, operating profit after costs, measured over total assets, increases.

Under the theory of the firm by Cyert and March, a stable pricing position reduces uncertainty and supports better alignment of objectives between the funding, lending and risk units. This leads to more consistent decisions such as limit allocation and pricing policies by business line. In this way, market power is translated into realised profit on assets.

Hypothesis H3: Good institutional quality, such as better government effectiveness, better regulatory quality and stronger rule of law, plays an important role in amplifying the impact of market structure on the performance of Vietnamese commercial banks.

Hypothesis H3 is developed to answer the third research question of the dissertation: “In the relationship between banking market structure and the performance of Vietnamese commercial banks, what role does institutional quality play for bank performance in Viet Nam”

Based on the theoretical foundation of North (1990) and on the literature on institutions in banking, institutional quality is seen as an important factor that reduces transaction costs, increases information transparency and improves competitive efficiency in financial markets. A strong institutional system creates a more stable operating environment, limits

moral hazard, improves supervision and supports a more efficient allocation of resources across banks. In this context, institutional quality can change in an important way how market structure affects bank performance.

More specifically, when institutional indicators such as government effectiveness (GE), regulatory quality (RQ) and rule of law (LR) improve, banks are in a better position to exploit market advantages in highly concentrated markets or when they have strong pricing power. From a theoretical perspective, good institutions reduce information asymmetry, strengthen market discipline and clarify the effects of market concentration (CR4, HHI) and market power (Lerner) on bank performance (ROA, ROE). This shows that the impact of market structure on performance depends not only on market characteristics but also on the institutional quality of each country.

Institutional quality plays a positive moderating role in the relationship between banking market structure and the performance of Vietnamese commercial banks. When the components of institutional quality (GE, RQ, LR) improve, the impact of market concentration and market power measured by CR4, HHI and Lerner on bank performance measured by ROA and ROE tends to become stronger and more positive. This is reflected in the expectation that the interaction terms between CR4, HHI and Lerner and GE, RQ and LR carry positive and statistically significant coefficients in the estimation models.

3.2. Research Model

Model (1): To assess the impact of market concentration on the performance of Vietnamese commercial banks using the CR4 market concentration index.

Model (2): To assess the impact of market concentration on the performance of Vietnamese commercial banks using the HHI market concentration index.

Model (3): To assess the impact of market competition on the performance of Vietnamese commercial banks using the Lerner index of market power.

Model (4): To assess the impact of institutional quality (measured by GE, LR and RQ) on the relationship between market concentration (CR4) and the performance of Vietnamese commercial banks.

- Model (4.1): To assess the impact of institutional quality based on GE (Government Effectiveness) on the relationship between market concentration CR4 (CR4_Assets, CR4_Deposits, CR4_Loans) and the performance of Vietnamese commercial banks.
- Model (4.2): To assess the impact of institutional quality based on LR (Rule of Law) on the relationship between market concentration CR4 (CR4_Assets, CR4_Deposits, CR4_Loans) and the performance of Vietnamese commercial banks.
- Model (4.3): To assess the impact of institutional quality based on RQ (Regulatory Quality) on the relationship between market concentration CR4 (CR4_Assets, CR4_Deposits, CR4_Loans) and the performance of Vietnamese commercial banks.

Model (5): To assess the impact of institutional quality (measured by GE, LR and RQ) on the relationship between market concentration (HHI) and the performance of Vietnamese commercial banks.

- Model (5.1): To assess the impact of institutional quality based on GE (Government Effectiveness) on the relationship between market concentration HHI (HHI_Assets, HHI_Deposits, HHI_Loans) and the performance of Vietnamese commercial banks.
- Model (5.2): To assess the impact of institutional quality based on LR (Rule of Law) on the relationship between market concentration HHI (HHI_Assets, HHI_Deposits, HHI_Loans) and the performance of Vietnamese commercial banks.
- Model (5.3): To assess the impact of institutional quality based on RQ (Regulatory Quality) on the relationship between market concentration HHI (HHI_Assets, HHI_Deposits, HHI_Loans) and the performance of Vietnamese commercial banks.

Model (6): To assess the impact of institutional quality (measured by GE, LR and RQ) on the relationship between market competition (Lerner) and the performance of Vietnamese commercial banks.

- Model (6.1): To assess the impact of institutional quality based on GE (Government Effectiveness) on the relationship between market competition (Lerner) and the performance of Vietnamese commercial banks.
- Model (6.2): To assess the impact of institutional quality based on LR (Rule of Law) on the relationship between market competition (Lerner) and the performance of Vietnamese commercial banks.
- Model (6.3): To assess the impact of institutional quality based on RQ (Regulatory Quality) on the relationship between market

competition (Lerner) and the performance of Vietnamese commercial banks.

Below, the author describes in detail the twelve research models above.

Model (1): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnCR4\_Assets_{it} + \beta_2 lnCR4\_Deposits_{it} + \beta_3 lnCR4\_Loans_{it} + \beta_4 \text{LLP}_{it} + \beta_5 \text{Size}_{it} + \beta_6 \text{Inflation}_t + \beta_7 \text{GDP}_t + \mu_{it}$$

Model (2): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnHHI\_\text{Assets}_{it} + \beta_2 \text{lnHHI\_Loans}_{it} + \beta_3 lnHHI\_Deposits_{it} + \beta_4 \text{LLP}_{t} + \beta_5 \text{Size}_{it} + \beta_6 \text{Inflation}_t + \beta_7 \text{GDP}_t + \mu_{it}$$

Model (3): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnLerner_{it} + \beta_2 \text{LLP}_{it} + \beta_3 \text{Size}_{it} + \beta_4 \text{Inflation}_t + \beta_5 \text{GDP}_t + \mu_{it}$$

Model (4.1): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnCR4\_Assets_{it} + \beta_2 lnCR4\_Deposits_{it} + \beta_3 lnCR4\_Loans_{it} + \beta_4 CR4\_Assets\_GE + \beta_5 CR4\_Deposits\_GE + \beta_6 CR4\_Loans\_GE + \beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model (4.2): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnCR4\_Assets_{it} + \beta_2 lnCR4\_Deposits_{it} + \beta_3 lnCR4\_Loans_{it} + \beta_4 CR4\_Assets\_LR + \beta_5 CR4\_Deposits\_LR + \beta_6 CR4\_Loans\_LR + \beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model (4.3): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnCR4\_Assets_{it} + \beta_2 lnCR4\_Deposits_{it} + \beta_3 lnCR4\_Loans_{it} + \beta_4 CR4\_Assets\_RQ + \beta_5 CR4\_Deposits\_RQ + \beta_6 CR4\_Loans\_RQ + \beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model (5.1): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnHHI\_Assets_{it} + \beta_2 lnHHI\_Deposits_{it} + \beta_3 lnHHI\_Loans_{it} + \beta_4 HHI\_Assets\_GE + \beta_5 HHI\_Deposits\_GE + \beta_6 HHI\_Loans\_GE + \beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model (5.2): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnHHI\_Assets_{it} + \beta_2 lnHHI\_Deposits_{it} + \beta_3 lnHHI\_Loans_{it} + \beta_4 HHI\_Assets\_LR + \beta_5 HHI\_Deposits\_LR + \beta_6 HHI\_Loans\_LR + \beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model (5.3): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnHHI\_Assets_{it} + \beta_2 lnHHI\_Deposits_{it} + \beta_3 lnHHI\_Loans_{it} + \beta_4 HHI\_Assets\_RQ + \beta_5 HHI\_Deposits\_RQ + \beta_6 HHI\_Loans\_RQ + \beta_7 \text{LLP}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Inflation}_t + \beta_{10} \text{GDP}_t + \mu_{it}$$

Model (6.1): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnLerner_{it} + \beta_2 ln\text{Lerner\_}GE_{it} + \beta_3 \text{LLP}_{it} + \beta_4 \text{Size}_{it} + \beta_5 \text{Inflation}_t + \beta_6 \text{GDP}_t + \mu_{it}$$

Model (6.2): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnLerner_{it} + \beta_2 ln\text{Lerner\_}LR_{it} + \beta_3 \text{LLP}_{it} + \beta_4 \text{Size}_{it} + \beta_5 \text{Inflation}_t + \beta_6 \text{GDP}_t + \mu_{it}$$

Model (6.3): This model is specified mathematically as follows:

$$BP_{it} = \alpha + \beta_1 lnLerner_{it} + \beta_2 ln\text{Lerner\_}RQ_{it} + \beta_3 \text{LLP}_{it} + \beta_4 \text{Size}_{it} + \beta_5 \text{Inflation}_t + \beta_6 \text{GDP}_t + \mu_{it}$$

- 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. Current Status of Operational Efficiency and Market Structure of Vietnamese Commercial Banks

4.1.1. Overview of the operational efficiency of Vietnamese commercial banks in the period 2009–2022

4.1.2. Status of the banking market concentration index of Vietnamese commercial banks

4.1.3. Status of the banking market strength index of Vietnamese commercial banks

4.2. Descriptive Statistics

4.2. Correlation matrix between independent variables and control variables

4.3. Multicollinearity test in the regression model

4.4. Regression results with the System GMM method

4.5. Robustness test of the System GMM method

4.6. Discussion of research results

The empirical results from 24 System GMM models allow clear conclusions to be drawn for each group of hypotheses H1, H2 and H3.

The group of hypotheses H1 concerns the impact of market concentration, measured by CR4 and HHI, on bank performance. H1 is only partially supported. The empirical evidence shows that the impact of market concentration is not one directional but differs across business dimensions. Concentration in deposits and assets has a positive effect on bank performance. This is reflected in the positive and statistically significant coefficients of lnCR4_Deposits and lnCR4_Assets in some models and especially of lnHHI_Deposits and lnHHI_Assets on both ROA and ROE in many model specifications. This implies that concentration in low risk and stable activities such as funding allows large banks to exploit economies of scale, reputation and cost efficiency, which is consistent with the arguments of the efficient structure view. However,

loan concentration shows negative or insignificant effects in many models, through lnCR4_Loans and lnHHI_Loans. This result suggests that in the Vietnamese context, where credit still faces information risk, asymmetry and uneven asset quality, higher loan concentration does not create benefits but reduces performance, especially in terms of ROE. Therefore, H1 is supported only for low risk dimensions such as funding and assets, while for the loan dimension it is largely rejected.

The group of hypotheses H2 concerns the impact of market power measured by the Lerner index on performance. H2 is strongly supported in all models. The coefficients of lnLerner are positive and highly significant in every case, with a much stronger effect on ROE than on ROA. This confirms that pricing power is an important factor that improves performance, especially the return on equity. Banks that have a high price margin, strong cost control, sound asset quality and the ability to protect a stable competitive advantage usually achieve superior financial results. This finding is consistent with studies in the efficient structure tradition and strengthens the argument that the Lerner index captures the ability to convert internal strength into financial efficiency. This is particularly relevant in Viet Nam, where the gap between large and small banks remains quite clear. Therefore, H2 is fully accepted.

The group of hypotheses H3 examines the moderating role of institutional quality. H3 is supported in all models that include interaction terms with GE, LR and RQ. The results show that institutions do more than just adjust the effects. They reshape the entire relationship between

market structure, market power and performance. Strong institutional quality amplifies the positive impact of concentration in low risk areas such as assets and deposits in many models, and at the same time highlights and in many cases increases the negative impact of loan concentration. This explains why many models show that CR4_Loans or lnHHI_Loans have more negative coefficients when interacting with GE, LR or RQ. Strong institutions prevent banks from using large credit portfolios to follow risk-seeking strategies while still maintaining high financial performance.

For market power, good institutions may limit the direct effect of pricing power on ROA but support the conversion of market power into equity performance. This is shown by the positive interaction coefficients of Lerner_GE and Lerner_RQ in the ROE models. This is important evidence that institutional quality plays a central role in ensuring that the effects of market structure and market power are channelled in a safe and sustainable direction. Thus, H3 is strongly accepted for all groups of models.

From these arguments, market concentration measured by CR4 and HHI has a positive effect on the performance of Vietnamese commercial banks but in a conditional way. Market power measured by the Lerner index has a positive effect on the performance of Vietnamese commercial banks. Good institutional quality, through better Government Effectiveness, Regulatory Quality and Rule of Law, plays an important role in amplifying the impact of market structure on performance. These

results are strongly supported by all groups of models. They show that the three factors market structure, market power and institutional quality must be considered together when evaluating the performance of Vietnamese banks in the research period.

CHAPTER 5. CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Research Conclusions

The regression analysis results of the model reveal several important conclusions, contributing to clarifying the relationship between market structure, institutions, and the operational efficiency of the banking system in the specific context of a developing transitional economy like Vietnam.

Firstly, the concentration of deposit and asset market share, reflected in each aspect: total assets, deposit market share, and loan market share, affects the operational efficiency of Vietnamese banks.

Secondly, market power (Lerner) is a crucial factor in improving bank efficiency, especially ROE, implying that commercial banks with good profit margin control will achieve efficient capital utilization.

Thirdly, institutional quality plays a significant regulatory role; interaction models show that institutions are the decisive factor in determining the direction and intensity of the impact of market structure on operational efficiency. Fourth, control variables such as Size, LLP, Inflation, and GDP have heterogeneous impacts, reflecting the complex nature of the macroeconomic environment and asset quality during the study period.

5.2 Policy implications

5.2.1 Policy implications for Vietnamese commercial banks

Vietnamese commercial banks are simultaneously affected by three mechanisms: the degree of market concentration in each aspect of operation, market power, and the quality of national institutions.

Firstly, commercial banks need to continue restructuring their operating portfolios to enhance efficiency in terms of capital mobilization and asset management. Large banks should prioritize expanding their retail customer base, developing payment ecosystems, and diversifying deposit products to reduce capital costs and stabilize medium- and long-term funding sources.

Secondly, banks need to limit risks in the credit sector and reorient their credit strategy towards prioritizing quality over scale. High credit concentration in the context of tightened institutions will quickly reveal inherent risks and provisioning costs. At the same time, strict control over credit concentration limits by industry, region, and large customers is necessary.

Thirdly, further improvement in risk management capacity and provisioning policies is needed. In most models, the LLP variable has a negative sign, as expected, and in some cases, it is a control variable indicating that banks need to strengthen their credit risk management framework, refine their internal scoring and rating models, accelerate the adoption of expected credit loss-based provisioning standards oriented towards IFRS, establish an early warning system based on historical and real-time data, and closely align credit policy with the risk appetite approved by the Board of Directors.

Fourth, it is necessary to sustainably leverage internal market power. Large banks should not rely solely on expanding interest rate margins but should shift their focus to improving internal operational efficiency. Specifically, banks need to increase investment in technology, optimize operational processes, control costs, improve service quality, and develop data analytics capabilities. This will transform market power into sustainable competitive advantages and more stable financial performance, rather than pursuing short-term profits based on high prices or service fees that do not add value to customers.

Fifth, banks need to strengthen compliance and learn how to leverage the benefits of institutional improvements. Empirical results show that when public governance, the rule of law, and regulatory quality improve, the benefits of asset concentration and, to some extent, deposit concentration are amplified, but the risks of credit concentration are more clearly exposed. This requires banks to proactively upgrade their compliance systems, strengthen the role of their legal and internal control departments, improve anti-money laundering and customer identification processes, and approach Basel II and Basel III standards for capital adequacy and risk management. In an increasingly transparent institutional environment, compliance is not only a mandatory requirement but also a competitive advantage, helping banks mitigate legal risks, enhance their reputation, and attract higher-quality customers.

Sixth, it is necessary to strengthen equity capital management capacity, as regression results show that ROE reacts more strongly than ROA to changes in market structure and market power. Commercial banks need to develop long-term capital strategies, optimize the capital structure between equity and debt, manage financial leverage at a reasonable level, adjust dividend policies to align with sustainable growth targets and risk appetite, and link ROE targets to capital adequacy and financial stability requirements, rather than pursuing high ROE in the short term.

Seventh, in the context of digital transformation and competition with non-bank institutions, Vietnamese commercial banks need to

strongly develop their digital ecosystem, because future economies of scale and market power will increasingly be linked to digital capabilities, data, and platforms rather than relying solely on traditional networks. Investing in comprehensive digital banking, big data analytics, artificial intelligence in credit assessment and monitoring, along with operational process automation, will help banks reduce credit risk, lower operating costs, and improve long-term efficiency.

5.2.2 Policy implications for the State Bank of Viet Nam

Based on empirical results and the operational characteristics of the Vietnamese banking market, the State Bank of Vietnam plays a key role in shaping the market structure, improving institutional quality, and ensuring system safety. From the empirical picture of market concentration, market power, and the regulatory role of institutions, several policy implications can be drawn:

First, the State Bank of Vietnam needs to continue improving the institutional and policy framework to reduce credit distortions and enhance the efficiency of capital allocation. The credit system still suffers from inefficient capital allocation, heavily dependent on a few large banks and a few traditional high-risk customer groups. The State Bank of Vietnam needs to expand and upgrade its credit information infrastructure and strengthen the role of the Central Credit Information Center.

Second, it is necessary to enhance prudent supervision of banks with high market share and high levels of credit concentration, as this

group poses the greatest potential for systemic risk when institutional conditions are tightened. The State Bank of Vietnam should promote the application of a risk-based supervisory model, categorizing banks according to the degree of credit concentration and safety index, thereby linking minimum capital requirements, capital adequacy ratios, and appropriate macroeconomic safety tools. The systematic implementation of stress tests under scenarios of economic downturn, interest rate shocks, and credit quality deterioration should become a regular practice, especially for banks with a high proportion of credit in the real estate, construction, and other high-risk sectors.

Thirdly, the State Bank of Vietnam needs to continue strengthening the quality of the rule of law and the regulatory framework in the areas of credit and bad debt resolution, as the LR and RQ indicators show a prominent regulatory role in the model. Results show that when the rule of law and regulatory quality improve, the risks of credit concentration and provisioning costs become more apparent, but at the same time, the benefits of asset concentration are amplified. Therefore, the State Bank of Vietnam needs to coordinate with relevant agencies to improve the legal framework towards uniformity, transparency, and ease of implementation, reducing overlaps between regulations on credit, collateral, enforcement, and bankruptcy proceedings.

Fourth, the State Bank of Vietnam needs to ensure that the application of capital and provisioning standards is not merely formal but substantive, reducing gaps in loan classification, limiting the concealment

of bad debts, and encouraging banks to make prudent provisions that accurately reflect risk.

Fifth, the State Bank of Vietnam should promote healthy competition in capital mobilization and payment services, where empirical results show that a reasonable level of concentration is often associated with higher efficiency.

Sixth, it is necessary to build a mechanism to monitor and control market power over banks with high Lerner indices, coordinating with the competition authority to closely monitor the spread between deposit and lending interest rates, unusual changes in service fee schedules, and behaviors that may restrict competition, thereby enhancing transparency.

Seventh, the State Bank of Vietnam needs to prioritize the development of modern data infrastructure and monitoring technology to track risks in near real-time. The approach should shift from primarily periodic reporting-based monitoring to a proactive and preventative monitoring model.

Eighth, the State Bank of Vietnam needs to continue to closely coordinate with other macroeconomic policy-making agencies to stabilize the macroeconomic environment, especially to control inflation at a reasonable level. Empirical results show that inflation in some models has a significant impact on banking efficiency, and the direction of this impact may vary depending on market structure and the level of institutional maturity. Coordination between monetary policy, fiscal

policy, and macroeconomic safety policy needs to be strengthened to ensure a stable environment for banking operations.

5.3 Limitations of the study and directions for future research

5.3.1 Limitations of the study

Firstly, limitations related to variables measuring market structure and competition.

Secondly, limitations from variables measuring banking performance. Although the thesis uses ROA and ROE to reflect asset efficiency and equity efficiency, it has not extended to risk-adjusted efficiency or cost efficiency indicators (Cost Efficiency/X-Efficiency). The lack of a Z-score is a limitation because the research context includes the period of bad debt resolution and system stabilization.

Thirdly, limitations regarding variables measuring institutional quality.

The thesis uses three indicators, GE, LR, and RQ, from the World Bank's WGI set to represent institutional quality. This may lead to the regulatory role of institutions being estimated primarily from a macroeconomic perspective without delving into industry specifics.

Fourthly, limitations from the System GMM methodology.

Fifthly, limitations from the specifics of the data and the Vietnamese context.

These limitations do not diminish the value of the thesis's conclusions, but they show that the research results need to be understood within the context of Vietnam, corresponding to the data and methods chosen. At the same time, these limitations open up many avenues for further research.

5.3.2. Directions for further research

Given the limitations mentioned and in the context of the rapidly changing Vietnamese banking industry under the impact of restructuring, integration, and digital transformation, this thesis proposes several directions for further research to expand and deepen this topic.

Firstly, expanding the system of competitive and market structure measurements towards a more dynamic and detailed approach, considering additional indicators focused on geographical regions or customer segments, thereby more accurately reflecting the uneven competitive landscape in the market.

Secondly, expanding the scope of bank performance measures to include risk-adjusted and income structure-based indicators.

Thirdly, incorporating variables related to digital transformation, technology investment, and business model innovation into the analytical framework.

Fourthly, analyzing the heterogeneous impacts among different banking groups.

Further studies could divide the sample into these groups or apply methods such as Panel Quantile Regression, GMM to each group, or

models with group interactions to more clearly quantify the differences in how market structure, market power, and institutions impact efficiency.

Fifth, add institutional variables at the industry and micro levels.

Sixth, analyze the impact of economic and policy shocks over time.

Overall, the above research directions not only help to gradually overcome the limitations of the thesis but also expand the analytical framework in a dynamic, multidimensional direction and more closely linked to the context of digital transformation, integration, and institutional reform of the Vietnamese banking system in the coming period.