



The Impact of Ownership Concentration on Bank Profitability: A Case Study of Vietnam

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Abstract

This article examines the impact of ownership concentration on bank profitability, with the sample of 28 Vietnamese commercial banks in the period 2009–2022. Bank profitability is assessed using both return on assets (ROA) and return on equity (ROE). The main regression methods include the least squares method (OLS), fixed effects model (FEM), random effects model (REM), and generalized least squares method (GLS). To perform robustness checks, the study examines endogeneity and uses the system generalized method of moments (S-GMM) for estimation. The interaction variables are added in regression models to reflect the role of intermediary factors such as mergers and acquisitions (M&A) activities and listing status on the relationship between ownership concentration and bank profitability. Key findings are: (i) the hypothesis of the negative impact of ownership concentration, represented by the largest shareholder, on bank profitability. (ii) the adverse effects of ownership concentration on profitability are mitigated in banks engaged in M&A activities and those listed on the stock market. The implications of this study extend beyond Vietnam and may hold relevance to countries sharing similar ownership structures and legal frameworks.

Keywords: Bank Profitability, Commercial Bank of Vietnam, Ownership Concentration

JEL Classifications: G10, G21, C23

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1. Introduction

In a joint stock company, shareholders consist of individuals and organizations holding at least one share. The shareholder structure defines the ownership structure of the company, representing the allocation of equity shares based on the shareholding ratio of related parties (Manna et al., 2016). Therefore, the ownership structure of a business reflects the overall relationship of rights and responsibilities to the owner's contributed capital.

Ownership structures are approached from two distinct angles: concentrated ownership and mixed ownership (Mandaci & Gumus, 2010). Pedersen & Thomsen (1999) argued that ownership concentration denotes shareholders holding the highest percentage of shares, and they are most affected by risks and monitoring costs. Ownership concentration delineates the division of ownership among various shareholders, significantly influencing shareholders' control of the company. High ownership concentration in companies is frequently observed in developing countries, where the interests of retail investors are inadequately protected due to the absence or incompleteness of relevant laws and regulations (Shleifer & Vishny, 1986; La Porta et al., 1999).

In banking operations, ownership concentration emerges as a critical facet (Iannotta et al., 2007). Presently, several Vietnamese commercial banks exhibit a concentration of share ownership among several shareholders and affiliated individuals. Although these ownership levels adhere to legal standards, they pose inherent risks. Shareholders with substantial ownership or influence in the bank have been known to manipulate operations, utilizing funds sourced from economic and residential sectors for high-risk ventures or personal projects. Consequently, certain banks experience elevated bad debt ratios, liquidity losses, and even negative equity, thereby affecting the bank's profitability. Some studies show that when large shareholders have too high an ownership ratio, profiteering may occur, negatively affecting the interests of small shareholders and the profitability of the bank (Bian & Deng, 2017; Kevser & Doğan, 2021; Vo & Mai, 2020; Nguyen & Liu, 2020; Nhu, 2024).

In fact, in Vietnam, there have been a number of cases of fraud involving concentrated ownership of banks, which have affected their profitability. A typical example is the case of major shareholders at Saigon Commercial Joint Stock Bank (SCB) who took over and controlled the bank, leading to their domination of the bank for personal gain. Using SCB to issue bonds and make internal loans in violation of regulations not only caused hundreds of thousands of billions of VND in losses but also seriously affected the reputation, profits, and safety of the banking system. This case shows that concentrated ownership, if not closely monitored, can lead to abuse of power, fraud, and the collapse of banking efficiency. Thus, investigating the ownership concentration in banks is essential, as it unveils the potential of management misuse – redirecting bank profits for personal gains and manipulating the bank for their own personal objectives. Such practices not only diminish the bank's value but also jeopardize the interests of other shareholders.

The Vietnamese banking system currently comprises 17 banks listed on the Ho Chi Minh Stock Exchange (HOSE), 2 banks listed on the Hanoi Stock Exchange (HNX), 8 banks trading on the stock exchange for unlisted banks (UpCOM), and 3 banks trading over-the-counter(OTC). Listing mandates disclosure of information, with financial reports requiring audit, fostering increased transparency for banks. Transparency, in turn, empowers banks to align their strategies with economic dynamics, fulfilling the

expectations of shareholders and depositors. This will contribute to strengthening the monitoring mechanism due to tighter regulation from regulatory agencies (Tran et al., 2018). This commitment ensures a high level of compliance with the industry's legal and regulatory framework. Moreover, transparency serves as a safeguard against potential misuse of power by major shareholders (exercising management and executive rights) to manipulate bank operations. As a consequence, people will gain greater confidence in depositing money, leading to the bank's enhanced financial capacity, strengthened position, and improved operational effectiveness and sustainability, compared to its pre-listing status. Some studies show that listing has a positive relationship with profitability, as banks strive to increase profits to attract investors (Duong & Nguyen, 2019; Le & Nguyen, 2021).

Mergers and Acquisitions (M&A) activities are widely spread globally and experienced significant growth in Vietnam during the period of market and economic liberalization. Specifically, in the period 2009-2022, the Vietnamese banking industry had 14 typical M&A deals. According to experts' forecasts, the M&A wave in the financial market, particularly in the banking industry, is expected to intensify at a faster pace in Strategic M&A among compatible banks is anticipated to optimize business advantages by leveraging strengths in products, services, and customer bases. Many empirical studies have shown that M&A helps increase profitability by making good use of resources, improving technology, expanding market share, reducing costs, and increasing income (Al-Sharkas, 2008; Borisov, 2017; Adthakkar, 2022). Following an M&A, the Board of Directors will expand in number, resulting in reduced rights for board members elected by major shareholders compared to the pre-merger scenario. Additionally, the newly formed bank will operate with a larger share capital, diminishing the control of major shareholders. This shift is anticipated to mitigate the risk of dominance by large shareholder groups and their affiliates.

The existing literature on relationships seems to show mixed findings on the impact of ownership concentration on profitability in banks. Some studies find that ownership concentration contributes to enhanced business performance (Edwards & Nibler, 2000; Shehzad et al., 2010; Ozili & Uadiale, 2017). Conversely, there are findings indicating that ownership concentration negatively affects profitability (La Porta et al., 1999; Laeven & Levine, 2009; Bian & Deng, 2017; Kevser & Doğan, 2021). Additionally, several studies suggest that increasing ownership concentration does not necessarily alter profitability (Iannotta et al., 2007; Barry et al., 2011). The reason for the different results may partly stem from differences in business environments, institutional characteristics, and legal regimes in different countries (Dong et al., 2014). This inconsistency highlights the need for further research to clarify the role of contextual factors in this relationship.

Via literature review and facts of the Vietnamese commercial banking system, the key research gaps are (1) the results of previous studies show that there is no consensus on the impact of ownership concentration on the profitability of commercial banks and (2) domestic empirical studies have not really paid attention to how M&A activities and listing status affect the relationship between ownership concentration and bank profitability.

To fill in this research gap, our paper is aimed at answering the following research questions: (1) What is the impact of ownership concentration on the profitability of Vietnamese commercial banks? (2) How do M&A activities influence the relationship between ownership concentration and the profitability of Vietnamese commercial banks? (3) In what way does listing status affect the relationship between ownership concentration and the profitability of Vietnamese commercial banks?

2. Literature Review and Hypotheses Development

2.1. The Impact of Ownership Concentration on Bank Profitability

The relationship between ownership concentration and bank profitability is intricately complex both in theory and practice. Various theoretical and empirical studies on this matter present conflicting perspectives.

Agency theory posits that a separation between ownership and management rights leads to inherent conflicts (Ross, 1973; Jensen & Meckling, 1976). Various scenarios may unfold in such situations: the executive board may utilize funds to expand business operations, consolidating their positions with increased salaries and power; the remuneration, bonuses, and substantial subsidies granted to executives become business costs borne by shareholders; executives might engage in risky investments for short-term gains. According to this theory, major shareholders are inclined to seek distinct benefits compared to minority shareholders. Consequently, large and powerful shareholders can exert pressure on management to enhance short-term performance, potentially driving managers towards riskier investment ventures and resulting in diminished overall business performance.

Another theory that aligns with a similar perspective is the principal-agent literature (Spence & Zeckhauser, 1971; Ross, 1973). According to this theory, the principal-agent problem entails a conflict of priorities between an individual or group (the principal) and the agent authorized to act on their behalf. The agent may act in a manner that goes against the best interests of the principal. This problem between the principal and agent can manifest in any situation where the ownership of an asset (principal) involves delegating direct control of that asset to another party (agent).

Several empirical studies have supported agency theory and the principal-agent literature. Conflicts of interest between major shareholders and minority shareholders can be a source of agency conflicts (La Porta et al., 1999; Lefort, 2005; Sacristan-Navarro & Gomez-Anson, 2007; Hu & Izumida, 2008; Murtinu, 2015). Claessens et al. (2002) found evidence that large shareholders are more likely to seek their own private interests and hence can expropriate the role of outside investors, notably when their control rights exceed their cash flow rights. Leech & Leahy (1991) and Guerrero-Villegas et al. (2018) found that ownership concentration has a negative influence on trading profit margin in UK enterprises. In Tunisia, Turki & Sedrine (2012) found a negative correlation between firm performance and owner concentration. Ongore (2011) in Kenya, Pervan et al. (2012) in Croatia, and Foroughi & Fooladi (2012) in Iran found similar results. Bian and Deng (2017), in a study of 115 Chinese banks (from 2007–2014), found that high ownership concentration negatively impacts profitability. Kevser and Doğan (2021) with banks in Turkey in the period 2005–2020 demonstrated that ownership concentration has a negative linear impact on both ROA and ROE. The research findings indicate that in Turkey, the combination of weak legal protections and high ownership concentration has eroded the efficacy of professional managers. Similarly, La Porta et al. (1999) posit that heightened ownership concentration provides owners with greater incentives and power to appropriate funds from minority shareholders. This is attributed to the ultimate owner's ability to expropriate minority interests and generate private profits, leading to a disproportionate increase in profitability as ownership concentration rises. Another harmful effect that can reduce the operating efficiency of a business is when large shareholders increase control, which will cause the loss of autonomy and creativity of managers when running the business (Burkart et al., 1997). In Vietnam, there are also some studies related to this issue. Vo & Mai (2020) analyzed data from 31 Vietnamese

commercial banks during the period 2006–2018, showing that high ownership concentration can reduce bank stability, thereby negatively affecting profitability. Nguyen & Liu (2020) analyzed the impact of ownership structure on the profitability of 21 Vietnamese commercial banks. The results showed that concentrated ownership has a negative impact on bank profitability. Nhu (2024) used data of 416 observations from 28 commercial banks to show that ownership concentration has a negative impact on bank ROA.

Contrarily, the shareholder monitoring hypothesis (Jensen & Meckling, 1976) presents an opposing perspective. According to this hypothesis, high ownership concentration can be advantageous for a company. Specifically, a company characterized by substantial ownership by large shareholders is anticipated to enhance both its performance and value. The rationale behind this assertion is that entities with significant ownership concentrations tend to stimulate shareholders to intensify their oversight of the company's operations and executive board activities, thereby bolstering the efficacy of corporate control. In contrast, companies with dispersed ownership structures may witness a lack of shareholder incentive to actively engage in monitoring.

Prior empirical investigations have provided more evidence supporting the shareholder monitoring hypothesis. Research by Shleifer & Vishny (1986) shows that a centralized ownership structure will overcome the free-rider problem and improve corporate performance through stricter monitoring mechanisms. Ehsan & Javid (2018) argued that large shareholders have more power, resources, and motivation to monitor managers. This ensures that managers do not ignore risky but profitable projects to improve operational efficiency and maximize shareholder value. Notably, Brockman & Yan (2009) and Dang (2016) indicated that significant shareholders play a pivotal role in enhancing corporate governance and elevating the quality of publicly disclosed information. Advocates for ownership concentration and firm performance often cite the trade-off between monitoring and embezzlement effects (Filatotchev et al., 2013). In cases where ownership is fragmented, effective monitoring becomes challenging, potentially leading to issues of managerial discretion. Shehzad et al. (2010) asserted that dispersed ownership weakens shareholders' ability to participate in management and oversight, impeding effective decision-making. Moreover, in situations of dispersed ownership, small shareholders bear the full cost of monitoring while receiving only a fraction of the benefits, leading to diminished incentives for active oversight. Hanafi et al. (2013) found that ownership concentration of Indonesian banks positively impacts bank profitability. Nguyen et al. (2015) researched the impact of ownership structure on the profitability of Vietnamese commercial banks in the context of restructuring. The results show that the profitability of commercial banks has a positive relationship with the level of equity concentration. Similarly, Ozili & Uadiale (2017), in their examination of banks in developing economies, observed that high ownership concentration enhances returns on assets, returns on equity, and overall bank profitability. A study by Gupta et al. (2022) focusing on Indian commercial banks during the period 2009–2010 to 2018–2019 revealed a positive influence of the largest shareholder on the bank's performance.

Besides, some studies have shown an insignificant relationship between ownership concentration and profitability (McConnell & Servaes, 1995; Pham et al., 2011). In a study of 181 banks from 15 European countries, Iannotta et al. (2007) found out that high ownership concentration did not affect profitability but improved loan quality. Fang & Shangguan (2022) showed that there is no significant correlation between ownership concentration and bank performance, whether linear or non-linear. Furthermore, an inverted U-shaped association has also been documented in other studies (Selarka, 2005; Heugens et al., 2009; Ma et al., 2010; Balsmeier & Czarnitzki, 2017; Nguyen, 2018).

An overview of the empirical literature shows that there are different views on the impact of ownership concentration on bank profitability. That is why we suspect that this relationship may vary depending on the influence of regulatory factors. We find that previous empirical studies have not paid much attention to the role of M&A activities and listing status on the relationship between ownership structure and profitability. These are the research gaps related to this topic.

2.2. Research Hypotheses

According to agency theory (Ross, 1973; Jensen & Meckling, 1976), concentrated ownership gives large shareholders the power and conditions to achieve goals that conflict with the interests of other shareholders. As a result, bank management is under pressure from large shareholders to perform activities that can increase business efficiency in the short term. This pressure leads managers to pursue new investment projects with higher risks, so the business is less profitable. There is much empirical evidence supporting this theoretical view (Bian & Deng, 2017; Kevser & Doğan, 2021; Vo & Mai, 2020; Nguyen & Liu, 2020; Nhu, 2024).

In Vietnam, the regulation of bank ownership ratios has been codified and consistently overseen by the government. Despite this regulatory framework, the practice of centralized credit granting to a group of related customers remains prevalent, posing an elevated risk to the financial system. Some studies at Vietnamese commercial banks also show that ownership concentration has a negative impact on bank profits (Vo & Mai, 2020; Nguyen & Liu, 2020; Nhu, 2024). In light of these circumstances, the research hypothesis regarding the impact of ownership concentration is formulated as follows:

H1: Ownership concentration has a negative impact on the profitability of Vietnamese commercial banks.

In contemporary times, M&A among banks is becoming increasingly prevalent, both in scale and quantity. This activity offers commercial banks involved in mergers, consolidations, or acquisitions a range of competitive advantages, aligning with the principles of economies of scale and economies of scope (Berger et al., 1987; Berger & Humphrey, 1997; Fu & Heffernan, 2008). According to this theory, large banks have a cost advantage over smaller counterparts, enabling them to generate higher profits. The expansion of scale significantly enhances the profitability of large banks, contributing to increased financial capacity, stock value, and overall profitability. Ab-Rahim et al. (2012) suggested that the implementation of bank merger policies has led to improvements in bank efficiency levels. In addition, Al-Sharkas et al. (2008), Borisov (2017), and Adthakkar (2022) indicate that banks undergoing M&A transactions experience positive changes in profitability. The profitability of merging banks is attributed to their improved resource utilization, enhanced technological innovation, increased market share, cost reduction, and overall income augmentation (Adthakkar, 2022).

Nevertheless, if banks fail to meticulously consider and evaluate their financial and administrative capacities, along with accurately assessing the current asset status of the target bank, they may face disadvantages, as suggested by the diseconomies of scale theory (Baumol et al., 1982). Diseconomies of scale manifest when a company grows to a size where per-unit costs increase with expanding output, thereby negating the advantages of economies of scale. This situation can lead to a decline in a bank's profitability post-M&A. Empirical studies by Linder & Crane (1993) and Beccalli & Frantz (2009) have indicated that banks often experience a reduction in profitability following M&A activities. Notably, a study by Nguyen and Nguyen (2020) focused on nine Vietnamese commercial banks engaged in M&A activities, concluding that there is insufficient evidence to discern the impact of M&A dummy variables on profitability.

In Vietnam, M&A activities have been actively promoted to facilitate banks in complying with ownership structure regulations following mergers and acquisitions. M&A helps promote and take advantage of opportunities to create greater resources in terms of capital, technology, human resources, and market share, while limiting difficulties in performing loan liquidity as well as other limitations and shortcomings (Nguyen, 2019; Nguyen, 2020). In instances where there exists a reciprocal ownership relationship between two banks, the M&A between the banks having a mutual ownership relationship results in an augmented charter capital. This, in turn, aids in diminishing the ownership ratio held by other individuals and organizations associated with the bank post-M&A. According to La Porta et al. (1999), increasing charter capital reduces the relative ownership ratio of major shareholders, thereby limiting centralized control and reducing the risk of abuse of power by major shareholders and related parties. Consequently, M&A activities have the potential to mitigate the adverse effects of ownership concentration. Thus, the second hypothesis is formulated as follows:

H2: The negative effect of ownership concentration on bank profitability will be less severe for banks carrying out M&A activities.

Listing provides banks with an incentive to undertake various activities aimed at enhancing efficiency in scale and profitability, thereby meeting the expectations of existing shareholders and attracting new investors. Lin and Zhang (2009) revealed that those listed on the stock market exhibited higher profitability compared to their unlisted counterparts in the case of Chinese commercial banks. Similar positive relationships between listing and profitability were observed in research conducted on Vietnamese commercial banks by Duong & Nguyen (2019) as well as Le & Nguyen (2021). This can be attributed to the listed banks' endeavors to generate income for shareholders while simultaneously engaging in high-performing activities to achieve optimal profitability indices.

There are three possible reasons why listing affects bank profitability. The first reason stems from the benefits of public listing. Nichols et al. (2009) argued that public listing allows banks to have better access to capital markets. The second reason stems from the discipline that managers of listed banks face in financial markets. Listed banks are subject to closer market supervision, which promotes prudent risk management and operational discipline—factors that contribute to improved profitability (Barry et al., 2011; Tran et al., 2018). The third reason stems from the fact that managers can learn from stock prices. Stock prices aggregate information from many different participants and therefore contain information that managers do not have. By learning from their own bank's stock prices, managers can make better investment decisions (Chen et al., 2007).

Listing mandates a high level of transparency in nearly all activities, providing shareholders with a foundation to assess and critique management decisions and risk evaluations. This, in turn, restricts the organization's operations from serving selective interests, such as those of affiliated companies and major shareholders. Guided by this rationale, we formulate the following research hypothesis:

H3: The negative effect of ownership concentration on bank profitability will be less severe for banks listed on the stock market.

3. Data and Methodology

3.1 Data

The study collects bank-specific data from the audited financial statements of 28 Vietnamese commercial banks, while macroeconomic data is sourced from the Asian

Development Bank's statistical database system in the period 2009-2022. The study used purposive sampling techniques, focusing on selecting banks that published full financial statements by the end of 2022.

As of November 30, 2024, the total assets of state-owned commercial banks and joint-stock commercial banks in Vietnam reached VND 18,976,636 billion (State Bank of Vietnam, 2024). The proportion of total assets of 28 commercial banks in the research sample compared to the total assets of commercial bank accounts for nearly 98%, so these 28 commercial banks can represent Vietnamese commercial banks.

3.2 Measure Variables

3.2.1 Ownership Concentration (OC)

Ownership concentration denotes shareholders holding the highest percentage of shares, and they are most affected by risks and monitoring costs (Pedersen & Thomsen, 1999).

Various methods exist for measuring ownership concentration in different studies. Some researchers utilize the total ownership ratio of the three largest shareholders (Dong et al., 2014), while others focus on the ownership ratio of the single largest shareholder (Wen & Jia, 2010; Agusman et al., 2014) to gauge the level of ownership concentration. For this article, we use the ownership ratio of the largest shareholder in the bank to represent ownership concentration.

3.2.2. Bank Profitability (BP)

Profitability is the net result of a number of policies and decisions. It indicates the efficiency with which a bank operates and utilizes its resources (Rose & Hudgins, 2013).

Various financial ratios are available for assessing a bank's profitability. Based on the synthesis of theoretical foundations and empirical evidence (Athanasoglou et al., 2008; Sufian & Habibullah, 2009; Alper & Anbar, 2011), we use ROA and ROE to measure the profitability of Vietnamese commercial banks.

3.2.3. Interaction Variables

To assess the impact of M&A activities and listing status on the relationship between ownership concentration and profitability, the study incorporates interaction variables $OC \times M\&A$ and $OC \times LIST$ into the regression model.

The dummy variable M&A takes the value of 1 if the bank participates in at least one deal within 3 years (Carletti et al., 2007), and 0 for all other cases.

The dummy variable LIST is assigned the value of 1 for banks listed on the HOSE or HNX, and 0 for banks not listed on these exchanges.

3.2.4. Control Variables

To mitigate the potential influence of other variables on the relationship between ownership concentration and profitability, the regression model incorporates several control variables at both the bank and macro levels. The inclusion of these control variables aims to isolate the net effect of ownership concentration on profitability, enhancing the precision of the analysis. Control variables include:

- Bank size (SIZE): This study uses SIZE as the natural logarithm of total assets. Boyd & Runkle (1993) used the natural logarithm of total assets to represent bank size. In regression models, the authors discovered a positive relationship between bank size and profits. Berger & Humphrey (1997) argue that large banks achieve economies of scale. Spathis et al. (2002) conducted research on banks in Greece and found that large banks have better profitability.

- Equity ratio (EA): EA is the ratio of equity to total assets. San and Heng (2013) found that EA has a positive relationship with ROA. The study predicts a positive relationship between EA and profitability.

- Economic growth (GDP): GDP growth rate. Evidence shows that GDP affects bank performance through monetary policy shocks (Jiménez et al., 2012). Research by Wibowo & Aumeboonsuke (2020) also shows that GDP growth affects the financial performance of banks.

- Inflation (INF): Inflation rate. Boyd et al. (2001) pointed out the impact of inflation on lending activities and the financial market activities of a country. Wibowo & Aumeboonsuke (2020) show that inflation affects the financial performance of banks.

3.3 Research Model

Based on the agency theory (Ross, 1973; Jensen & Meckling, 1976) and some empirical studies (Bian & Deng, 2017; Kevser & Doğan, 2021), as well as the current situation at Vietnamese commercial banks, the authors propose a specific research model as follows:

$$BP_{i,j,t} = \alpha + \beta OC_{i,t} + \eta'X_{i,t} + \rho'C_t + \varepsilon_{i,t} \quad (1)$$

In there:

i, t : Symbols for bank and time (unit is year), respectively;

α : Constant;

β, η, ρ : The coefficient of independent variables in the model.

$\varepsilon_{i,t}$: Indeterminate error;

$BP_{i,j,t}$: A vector of variables representing profitability, including ROA and ROE;

$OC_{i,t}$: A variable representing ownership concentration measured by the ownership ratio of the largest shareholder;

$X_{i,t}$: A vector of control variables at the bank level, such as bank size and equity ratio;

C_t : A vector of control variables at the macro level, such as economic growth and inflation;

Model (1) aims to test the impact of ownership concentration on bank profitability. In particular, the dependent variable is BP, used to measure the bank's profitability, including two variables measuring ROA and ROE. Consistent with hypothesis H₁, we expect a negative relationship between ownership concentration and bank profitability.

3.4. Research Methodology

The procedure for examining hypotheses is carried out in an organized approach, including (1) development of multiple hypotheses based on theoretical frameworks and prior empirical findings; (2) design research with sample selection, variable measurement methods, and research model determination; (3) analysis of data using appropriate statistical methods; and (4) evaluation of hypotheses based on statistical results.

To assess the impact of ownership concentration on bank profitability, the study employs multiple regression models, including Ordinary Least Squares (OLS), Fixed Effects Model (FEM), Random Effects Model (REM), and Generalized Least Squares (GLS). Stata software is utilized to process the regression results. For the OLS method, the model will be strictly bound to the space and time of the objects when the regression coefficients are constant. This makes the OLS method unable to reflect the differences in the impacts of each commercial bank. The FEM method can control and separate separate effects in space and time from independent variables, so the effects of independent variables can be more accurately estimated. Meanwhile, the REM method assumes that the individual characteristics of the subjects are random and uncorrelated with the

independent variables. Therefore, REM considers the residuals of the subjects (uncorrelated with the explanatory variable) as a new explanatory variable. To decide whether to choose the estimation results from the FEM or REM method, the article uses the Hausman method. The hypothesis H_0 of the Hausman method is that the FEM and REM estimates are not different. If the hypothesis H_0 is rejected, the FEM method is selected, and vice versa.

In addition, the study performed some essential tests to detect violations of the model's assumptions, including autocorrelation and heteroskedasticity. If these phenomena occur in the model, the GLS method will be used to correct them to ensure stable and effective estimates, providing more consistent and accurate results. Furthermore, to help increase the reliability of the results, the study performed a robustness check by checking for endogeneity and using the S-GMM tool to estimate the research model.

Table 1 describes an overview and expected correlation signs for the variables in the research model.

Table 1: Description of Variables in the Model

Variable	Variable name	Measure	Hypothesis
Dependent variable			
BP	Bank profitability	ROA, ROE	
Independent variable			
Research variable			
OC	Ownership concentration	The ownership ratio of the largest shareholder	-
OC×M&A	Interaction variable	M&A = 1 for banks that have carried out M&A activities within 3 years and = 0 for the remaining cases	+
OC×LIST	Interaction variable	LIST = 1 for banks listed at the HOSE or HNX and = 0 for the remaining cases	+
Control variable			
SIZE	Bank size	The natural logarithm of total assets	
EA	Equity ratio	Equity/total assets	
GDPG	Economic growth	GDP growth rate	
INF	Inflation	Inflation rate	

Note: (+) and (-) correspond to the positive and negative impact of the independent variable on the dependent variable.

Source: Authors selection basing on literature review

4. Results and Discussions

4.1. Descriptive Statistics

Table 2 descriptive statistics for the entire sample (28 Vietnamese commercial banks, period 2009-2022) show that the average ROA is about 0.928%, of which the largest value is 2.36%. The average ROE is about 10.568%, of which the largest value is 24.632%. Considering the ownership concentration ratio, the average OC of banks in

Vietnam is 35.52%. Regarding several control variables, the sample statistics show that the mean value of SIZE is 5.075. Banks hold an average of 9.135% equity in total assets. In the research sample, Vietnam's average GDP growth rate is 5.851%, with a corresponding inflation rate of 5.411%.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA (%)	388	0.928	0.681	0.040	2.360
ROE (%)	388	10.568	7.440	0.610	24.632
OC (%)	388	23.520	28.276	3.630	100
SIZE	388	5.075	0.519	4.213	6.061
EA (%)	388	9.135	3.634	4.670	17.920
GDP (%)	388	5.851	1.476	2.560	8.020
INF (%)	388	5.411	4.450	0.600	18.600

Source: Authors' compilation and analysis from Stata Software

4.2 Correlation Matrix

Table 3 shows the correlation coefficients between independent variables. We found low correlations between the model's explanatory variables. Therefore, multicollinearity is not a serious problem in this model. Notably, the correlation coefficient between ROA and OC is negative, consistent with hypothesis H₁. This result provides preliminary evidence that there exists a negative relationship between ownership concentration and the profitability of Vietnamese commercial banks.

Table 3: Correlation Matrix

Variable	ROA	ROE	OC	SIZE	EA	GDP	INF
ROA	1.0000						
ROE	0.8336	1.0000					
OC	-0.0952	0.1106	1.0000				
SIZE	0.0772	0.4087	0.5030	1.0000			
EA	0.3036	-0.1349	-0.2972	-0.6651	1.0000		
GDP	-0.0578	-0.0471	0.0034	-0.0116	-0.0614	1.0000	
INF	0.1935	0.0755	0.0072	-0.2577	0.1925	0.0473	1.0000

Source: Authors' compilation and analysis from Stata Software

4.3 Ownership Concentration and Bank Profitability

Table 4 presents the study's estimation results to test hypothesis H₁. The results of testing the model selection suitable for the research sample through the F-test (p-value < 0.05) and Hausman test (p-value < 0.05) show that the FEM model is the most suitable for the level of 5% significance. Next, the authors test the defects of the research model. The results of the Wooldridge test and White's test (p-value < 0.05) show that there is autocorrelation and heteroskedasticity for REM. Therefore, the results of the regression of the research model according to FEM are not really effective and reliable.

To overcome autocorrelation and heteroscedasticity and achieve model efficiency, the study uses the GLS method. GLS is a technique for estimating unknown parameters in a linear regression model when there is a certain degree of correlation

between the residuals in the regression model. Regression under GLS will provide more efficient linear estimation results.

To test for endogeneity, the study conducted a regression using the 2-stage regression method (2SLS) with tests for each independent variable in the model with their differences as instrumental variables. Then, the above regression model was tested using the endogeneity test in Stata. The results of the Durbin-Wu-Hasman test showed that the variables SIZE, GDP, and INF are endogenous variables in the model with the dependent variable ROA; the variables GDP and INF are endogenous variables in the model with the dependent variable ROE (p-value < 0.05).

To verify the reliability and consistency of the results, the study additionally used S-GMM estimation. The results in Table 4 show that the direction and statistical significance of the research variables according to S-GMM and GLS are relatively consistent, indicating that the original GLS model has a certain reliability. However, the S-GMM method was used to overcome potential endogeneity problems and control for unobserved fixed effects. The fact that the S-GMM results still maintained the significance of the main variables showed that this effect was sustainable and not biased by technical problems in the model. Therefore, the results of the regression analysis according to S-GMM will be used to explain the correlation between the variables in the research model.

Notably, the Hansen test shows that the model is valid (p-value > 0.1). In addition, all AR(1) serial correlation indices are correlated and reach the 5% significance level (p-value < 0.05); all AR(2) serial correlation indices are not correlated (p-value > 0.05). Therefore, all the estimated results by S-GMM are statistically significant.

The research results in columns (2) and (4) show that ownership concentration has a negative and significant impact on bank profitability. The regression coefficients of the OC variable are -0.006 and -0.055 for ROA and ROE, respectively; both variables are statistically significant. The regression coefficients also show that ownership concentration has a stronger impact on reducing ROE than ROA. This result supports the hypothesis that ownership concentration and bank profitability have a negative relationship (La Porta et al., 1999; Laeven & Levine, 2009; Houston et al., 2010; Bian & Deng, 2017; Kevser & Doğan, 2021).

The structure of major shareholders is a pivotal factor affecting a bank's profitability. However, due to the relatively low quality of inspection and supervision, there persists a phenomenon where shareholders, large shareholder groups, or influential individuals exert control over a bank's credit activities. Directed lending and lending for backyard projects of bankers are still common in credit activities. Furthermore, it cannot be discounted that major shareholders may exert pressure on bank executives to invest in high-risk projects for short-term gains or to advance their own interests. In all the aforementioned scenarios, the overarching outcome is that the bank's profitability is more or less impacted.

In considering control variables, it is observed that banks with larger asset sizes exhibit higher profitability, as evidenced by the positive impact of SIZE on the Return on Assets (ROA) and Return on Equity (ROE) of Vietnamese commercial banks. This finding aligns with research conducted by Berger & Humphrey (1997) and Spathis et al. (2002), wherein they proved that SIZE is an important determinant of bank profitability. The rationale behind this correlation can be attributed to the capacity of large banks to diversify risks across extensive product lines (Brown & Dinç, 2011; Demirgüç-Kunt & Huizinga, 2013). Additionally, customers of large banks often possess robust financial foundations and pursue highly viable projects, enabling banks to generate stable and sustainable profits (Vo & Mai, 2017). Consistent with the viewpoints of San & Heng (2013), our research results also reveal that the Equity-to-Asset (EA) variable holds

statistical significance and exerts a positive impact on profitability. Banks endowed with high equity capital demonstrate resilience against financial risks, diminish the risk of insolvency, reduce the cost of external capital sources, and consequently achieve higher profitability.

Macroeconomic conditions also significantly affect bank profitability. Specifically, GDP has a positive impact on ROA and ROE with a statistical significance of 1%. This can be explained by the fact that economic growth is often accompanied by higher demand for loans from businesses and individuals, helping banks increase their interest income. INF has a negative impact on ROA with a statistical significance of 1%. High inflation reduces customers' purchasing power and repayment ability, leading to an increase in nonperforming loans, forcing banks to make more provisions, reducing profits. These results are similar to the studies of Boyd et al. (2001), Jiménez et al. (2012), and Wibowo & Aumeboonsuke (2020).

Taking all the results together, we provide strong evidence in support of Hypothesis H₁. This result is consistent with previous findings by La Porta et al. (1999), Laeven & Levine (2009), Houston et al. (2010), Bian & Deng (2017), and Kevser & Doğan (2021).

Table 4: The Impact of Ownership Concentration on Bank Profitability

	ROA		ROE	
	GLS (1)	S-GMM (2)	GLS (3)	S-GMM (4)
Lagged (-1)		0.777***		0.437***
OC	-0.007***	-0.006***	-0.055***	-0.038**
SIZE	0.879***	0.646***	10.815***	7.569***
EA	0.110***	0.047**	0.438***	0.468***
GDP	0.002	0.024***	-0.083	1.503***
INF	0.039***	-0.095***	0.419***	0.141
F-test	0.0000		0.0000	
Hausman test	0.0165		0.0001	
Wooldridge test	0.0000		0.0001	
White's test	0.0059		0.0000	
Number of groups	28	28	28	28
Hansen test		0.653		0.249
AR (1) test		0.014		0.042
AR (2) test		0.674		0.348

Note: The variable Lagged (-1) represents a one-year time lag of the dependent variable. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Authors' compilation and analysis from Stata Software

4.4 Effects of M&A activities

The results of the testing of Hypothesis H₂ are presented in Table 5. To test the impact of M&A activities on the relationship between OC and profitability, we add to the model the M&A dummy variable and the OC×M&A interaction variable. The model selection process, guided by testing, reveals that REM and FEM are the best fit for the model with the dependent variables ROA and ROE, respectively, with a significance level of 5%. In addition, all variables in the model have variance inflation factors (VIF) less than 10, with the mean VIF value being 1.63. Therefore, it can be concluded that the model does not suffer from serious multicollinearity problems (Gujarati & Porter, 2009). Subsequently, the authors test the defects of the research model. The test results indicate the presence of autocorrelation and heteroskedasticity. To solve these phenomena, we use the GLS model. To ensure reliability, the study tested for endogeneity and used S-

GMM estimation. The results of Table 5 show that the variables have relatively consistent directions and statistical significance between S-GMM and GLS, in which S-GMM helps to overcome the endogeneity problem. Therefore, the S-GMM results are used to explain the relationship between variables in the model.

The results in columns (2) and (4) of Table 5 show that the regression coefficients of OC×M&A are both positive and statistically significant. This indicates that the adverse relationship between ownership concentration and profitability is less pronounced for banks that have undergone M&A activities. Following an M&A, the acquiring bank operates with an enlarged share capital, potentially leading to a reduction in control by major shareholders compared to the pre-M&A scenario. This is due to the fact that the ratio of voting rights to the total number of voting shares experiences a relatively smaller decrease. Such a dynamic can serve as a preventive measure against issues of group interests—where shareholders or major shareholder groups dominate bank operations. Additionally, the scale resulting from M&A activities aids in cost reduction by minimizing duplication in the distribution network and saving operational and management costs. Post-M&A, the involved parties can leverage each other's strengths, increase market share, and capitalize on customer relationships, thereby enhancing competitiveness and creating new business opportunities.

Table 5: Effect of M&A activities on the relationship between Ownership Concentration and Bank Profitability

	ROA		ROE	
	GLS (1)	S-GMM (2)	GLS (3)	S-GMM (4)
Lagged (-1)		0.736***		0.600***
OC	-0.008***	-0.006***	-0.062***	-0.054***
OC×M&A	0.004***	0.031***	0.098**	0.254***
M&A	-0.747***	-2.215***	-8.160***	-21.477***
SIZE	0.921***	0.412**	11.081***	5.339***
EA	0.114***	0.031***	0.458***	0.146
GDP	0.004	0.026***	-0.046	0.166**
INF	0.037***	-0.091***	0.404***	-0.025
F-test	0.0000		0.0000	
Hausman test	0.2579		0.0029	
Breusch-Pagan test	0.0000			
Wooldridge test	0.0000		0.0001	
White's test	0.0050		0.0001	
Hansen test		0.656		0.327
AR (1) test		0.025		0.022
AR (2) test		0.312		0.219

Note: The variable Lagged (-1) represents a one-year time lag of the dependent variable. *, ** and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Authors' compilation and analysis from Stata Software

4.5. Effects of listing

The results of testing Hypothesis H₃ are presented in Table 6. To test the impact of listing on the relationship between OC and profitability, we add to the regression model the dummy variable LIST and the interaction variable OC×LIST. The results of selecting the model suitable for the research sample through testing show that FEM is the most suitable model with a significance level of 5%. In addition, all variables have VIF less than 10 (Mean VIF = 1.94) so it is considered not to cause serious multicollinearity problems. Next, the author tests the research model for defects. The test results also show

that there is autocorrelation and heteroskedasticity. To overcome these phenomena, we use the GLS model. Then, we conduct endogeneity testing and apply S-GMM estimation to ensure reliability. Table 6 shows that the results between S-GMM and GLS are relatively consistent in direction and statistical significance, in which S-GMM handles endogeneity well. Therefore, the S-GMM results are used to analyze the relationship between variables in the model.

The regression results show that the coefficient of OC×LIST has positive values in columns (2) and (4) and is statistically significant. This evidence suggests that the negative relationship between ownership concentration and bank profitability is less severe for banks listed on the stock market.

Banks participating in listings on the HOSE and HNX are subject to more comprehensive and stricter regulations. Listed banks are obligated to publicly disclose extensive information, including the number of securities held by key figures, financial standing, revenue, costs, orientation, and development strategy. Beyond adhering to general information disclosure principles, listed banks are subject to additional scrutiny from investors. For instance, if banks intend to issue shares to the public with a significant number of shareholders, they must prepare and submit an issuance release. Investors retain the right to pursue legal action if the bank disseminates any false information in the release. Consequently, listed banks contribute to heightened transparency within the entire financial system, mitigating concerns related to governance, operations, operational safety, and the potential negative influence of major shareholders. Furthermore, stock listing serves as a robust advertising method for banks, facilitating business activities and enhancing opportunities for partnerships.

Table 6: Effect of Listing on the Stock Market on the Relationship between Ownership Concentration and Bank Profitability

	ROA		ROE	
	GLS (1)	S-GMM (2)	GLS (3)	S-GMM (4)
Lagged (-1)		0.708***		0.619***
OC	-0.008***	-0.005**	-0.070***	-0.060**
OC×LIST	0.004***	0.007**	0.059***	0.039**
LIST	-0.041	-0.189	0.115	-1.424
SIZE	0.837***	0.049	9.351***	4.823*
EA	0.108***	0.024	0.390***	0.014
GDP	-0.002	0.021***	-0.087	0.820**
INF	0.037***	-0.095***	0.407***	-0.013
F-test	0.0000		0.0000	
Hausman test	0.0000		0.0025	
Wooldridge test	0.0000		0.0001	
White's test	0.0014		0.0002	
Hansen test		0.659		0.132
AR (1) test		0.017		0.034
AR (2) test		0.519		0.741

Note: The variable Lagged (-1) represents a one-year time lag of the dependent variable. *, ** and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Authors' compilation and analysis from Stata Software

5. Conclusion and Policy Implication

5.1. Conclusion

The research is aimed at empirically testing the impact of concentrated ownership on profitability on the sample of 28 Vietnamese commercial banks in the period 2009-2022. The key findings of the research are: First, it confirms a negative association between the ownership concentration ratio and the profitability of Vietnamese commercial banks. As the ownership ratio of major shareholders in Vietnamese commercial banks increases, the banks' profitability tends to decrease. This result is consistent with the studies of La Porta et al. (1999), Laeven & Levine (2009), Houston et al. (2010), Bian & Deng (2017), and Kevser & Doğan (2021). Second, by adding interactive variables, the research results indicate that M&A activities and listing on the stock market play a role in mitigating the negative impact of ownership concentration on bank profitability. This new finding contributes valuable empirical evidence to the research topic concerning the influence of ownership concentration on the operations of commercial banks.

5.2 Policy Implications

From the key empirical findings mentioned above, the following policy implications are proposed to related stakeholders for ensuring the sustainable development and stability of Vietnamese commercial banks with the aims of focusing on the ownership concentration ratios.

First, the National Assembly can consider amending the Credit Institutions Law to expand the categories of subjects involved in ownership transparency. This helps the bank's shareholder structure to be more dispersed and healthier, avoiding too much power and autonomy concentrated in certain small groups of shareholders. In addition, SBV needs to strengthen control of credit concentration in potentially risky areas such as corporate bond investment, real estate investment and trading, and securities. This contributes to limiting the organization's operations in a way that serves backyard companies and the interests of major shareholders, harming the interests of the bank and its shareholders. Regulations to reduce the ownership ratio may reduce the attractiveness of domestic banks to foreign investors. Therefore, instead of reducing the maximum ownership ratio of individuals and organizations, the SBV can pay attention to M&A activities and bank listings presented below.

Second, M&A activities are one of the measures to reduce the maximum percentage of an individual or organization owning shares of a bank. The SBV needs to provide and update knowledge about M&A activities so that banks can clearly understand their strengths and weaknesses during the integration period. In addition, the SBV needs to quickly build a number of regional banks capable of international competitiveness, fully meeting world risk management standards, and ready for comprehensive integration. Weak banks should be acquired by foreign investors or domestic banks themselves. The parties need to think according to the model of development cooperation and mutual benefit when negotiating M&A deals, thereby contributing to improving the bank's profitability.

Third, banks must be transparent and have a good disclosure information system. Listed banks are required to disclose information, and financial reports must be audited to increase banks' transparency. Therefore, unlisted banks need to have a roadmap to continue listing on the official stock exchange to increase transparency for the entire

system. This contributes to limiting the abuse of power by major shareholders (administrative and executive rights) to manipulate banks' operations.

5.3 Research limitation

The limitation of this study is that (i) the research sample is on Vietnamese commercial banks only. Banks with 100% foreign capital, joint venture banks in Vietnam, or banks in other countries are excluded. Future research could expand the sample to include different types of banks as well as banks from different countries. Second, the moderating role of other national factors (e.g., national culture, institutional quality) in the relationship between ownership concentration and bank profitability is not added in the regression model.

5.4 Declaration

The authors commit that the article " The Impact of Ownership Concentration on Bank Profitability: A Case Study of Vietnam " is our' own research. Except for the cited references, the authors commit that all content in this article has not been published in any journal before and commit not to submit the article to another journal while waiting for review. Research by other authors used in the article is cited according to regulations.

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