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The role of control and power in the relationship between ownership structure and credit risk: a study from Vietnamese banks

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Abstract

Purpose – The paper aims to examine the moderating role of factors such as foreign leadership and listing on the relationship between ownership structure and credit risk (CR) in Vietnamese commercial banks.
Design/methodology/approach – Research data were collected from 28 commercial banks in Vietnam over the period 2009–2023. The system-generalized method of moments was employed to generate the estimated results.
Findings – The research results revealed that (1) the negative impact of foreign ownership (FO) on CR was stronger for banks with foreign board members and (2) the positive impact of ownership concentration on CR was weaker for listed banks.
Research limitations/implications – Recommendations are proposed to regulatory agencies and commercial banks to mitigate credit risks.
Originality/value – This research develops theories related to the role of control and empowerment of foreign shareholders in mitigating CR in banks. Specifically, the developed theories emphasize that (1) the governance mechanism towards empowering and responsibilities of foreign shareholders would help utilize FO to mitigate CR and (2) the control and monitoring mechanism would mitigate the impact of concentrated ownership in increasing CR.

Keywords Credit risk, Foreign ownership, Ownership concentration, Ownership structure, State ownership
Paper type Research paper

1. Introduction

Banks play an important role in sustainable development by driving economic growth, ensuring financial stability, advancing social progress and promoting environmental responsibility through their financial intermediation (Casu *et al.*, 2022). For banks to contribute to sustainability, credit risk (CR) management is a key factor because their assets and income are mainly from credit. Weber (2014) argued that a risk management model reflects sustainable development. Alfiana *et al.* (2024) demonstrated that effective risk management strengthens

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banks, making them more resilient to economic fluctuations by enhancing their reputation, which attracts customers and investors, thereby promoting sustainable development.

The ownership structure (OS) refers to the allocation of equity shares based on the stakeholders' shareholding ratio (Manna *et al.*, 2016). It is approached through two components: ownership concentration (OC) and mixed ownership (Mandaci and Gumus, 2010). OC pertains to shareholders holding the highest percentage of shares (Pedersen and Thomsen, 1999). In contrast, mixed ownership structures encompass varying ownership percentages associated with different shareholder categories, such as foreign, private and state ownership (SO), as highlighted in the studies of Wen and Jia (2010).

The extant literature on these relationships seemed to show mixed findings on the impact of OS on CR in banks. This inconsistency highlights the need for further research to clarify the role of contextual factors in this relationship. Accordingly, this study seeks to develop theories that explain how the control and empowerment of foreign shareholders can help mitigate CR in banks.

The context of this research is banks in Vietnam. In fact, recently, the rapid capital increase of commercial banks in Vietnam has significantly altered their OS. This shift has brought about major changes in capital structure, banking governance and the tendency to accept various risk levels, including CR. One key factor contributing to CR is the high risk-taking behavior of bank shareholders. As a result, OS has been a focal point in previous research on factors influencing CR (Pham and Bui, 2019; Liu *et al.*, 2020; Moudud-Ul-Huq *et al.*, 2022; Yuan *et al.*, 2022; Mili and Alaali, 2023; Pham *et al.*, 2024).

The following sections of this paper are structured as follows. Next, we provide a literature review and research hypotheses. Then, the research methodology is presented. The results, discussion and policy implications will be concluded.

2. Literature review and research hypotheses

2.1 The impact of ownership structure on credit risk

The topic of the impact of OS on bank CR has been studied and has produced many conflicting results (Pham and Bui, 2019; Liu *et al.*, 2020; Moudud-Ul-Huq *et al.*, 2022; Yuan *et al.*, 2022; Mili and Alaali, 2023; Pham *et al.*, 2024). OS is divided into many different types. In this study, we focus on two types of OS, namely foreign ownership (FO) and concentrated ownership, which have been studied with mixed results in their relationship to CR.

In fact, the impact of FO on CR has been found with inconsistent results. Some research found that FO had a negative impact on CR (Ehsan and Javid, 2018; Misman *et al.*, 2015; Yuan *et al.*, 2022). For example, Ehsan and Javid (2018) argued that foreign shareholders often had more effective management capabilities, abundant capital, developed technological levels and advanced monitoring mechanisms. Thus, foreign investors can be world-renowned experts equipped with professional skills to control loan quality and minimize credit risks. However, other studies found that the larger the proportion of FO in banks, the higher their CR (Amor, 2017; Chen *et al.*, 2017; Liu *et al.*, 2020). For example, Amor (2017) noted that foreign shareholders often promoted experts from their home countries to the management board of domestic banks. These foreign experts might propose policies that were not compatible with the current domestic market situation, thus increasing credit risks for banks. As a result, Rivai *et al.* (2020) concluded that FO reduced CR only when foreign shareholders were large shareholders and came from developed countries.

In the same vein, empirical studies have shown that there were mixed results for the relationship between OC and bank CR. Several studies have shown that high levels of concentrated ownership lead to poor credit quality and higher CR (Hou *et al.*, 2016; AlHares *et al.*, 2018; Vo and Mai, 2020; Duong, 2021; Mili and Alaali, 2023). This line of thinking contended that agency problems were intensified in the presence of OC due to potential conflicts of interest between controlling and minority shareholders (AlHares *et al.*, 2018). Some other empirical studies, however, have shown opposite results (Agusman *et al.*, 2014;

Dong *et al.*, 2014; Dang, 2016; Nguyen *et al.*, 2018; Pham and Bui, 2019). Dong *et al.* (2014) argued that shareholders holding a large number of shares had greater control and thereby contributed to increased prudence during operations. Dang (2016) stated that OC could enhance corporate governance capacity and information transparency. Similarly, mixed results were found by Nguyen (2018) and Jabbouri *et al.* (2023).

The mixed results suggested that there could be the influences of contextual factors, which have been under-researched in the literature. Examining the impact mechanisms of OS on CR, we argue that previous empirical studies have not really paid attention to the following issues: (1) the role of governance mechanisms aimed at delegating powers and responsibilities to foreign shareholders on the relationship between FO and CR and (2) the role of control and monitoring mechanisms on the relationship between concentrated ownership and CR. Based on these gaps, we theorize and develop the following hypotheses.

2.2 Research hypotheses

2.2.1 Foreign ownership and credit risk. The "global advantage" perspective suggested that foreign-owned banks (FOBs) had less CR than domestic banks because they could benefit from more advanced technology, a highly skilled workforce and better risk management practices (Berger *et al.*, 2000). Some previous studies concluded that FO and CR have an inverse relationship (Ehsan and Javid, 2018; Yuan *et al.*, 2022). Foreign shareholders often have more effective management capabilities, abundant capital, developed technology and advanced monitoring mechanisms (Ehsan and Javid, 2018). Thanks to these characteristics, foreign investors can help control loan quality more effectively and thus limit credit risks. In the context of Vietnamese banks, therefore, we expect the following hypothesis:

H1. FO has a negative impact on the credit risk of Vietnamese commercial banks.

However, it is worth noting that these positive features will not be effective if the FO does not equal more foreign control. The reason is that if the ownership control is low, investors will not be motivated and will face many difficulties in participating in consulting on business strategies in banks. According to Shehzad *et al.* (2010) and Dang (2016), small shareholders bear the full cost of monitoring while receiving only a small portion of the benefits. Therefore, they have little incentive to monitor the firm's performance. In this context, domestic banks need a governance mechanism that aims to delegate power and responsibility to foreign shareholders to take advantage of effective management capabilities, advanced technology and close supervision from a team of international experts.

We argue that foreign partners may play a crucial role in credit control in areas with potential risks. They can provide policy advice, technical support and financial assistance to domestic banks. However, in many Vietnamese banks, the role of foreign shareholders is considered unclear due to their modest ownership stakes and control. The direct involvement of foreigners in management boards can enhance CR control policies by advising on strategies and policies. In fact, firms with foreigner participation in management and control would benefit from technical cooperation, consulting and marketing arrangements, branding, patent obligations and the sharing of management resources (Dhar *et al.*, 1988). National diversity fosters more effective global relationships, leading to increased operational efficiency and reduced costs and credit risks for domestic commercial banks. As a result, this study expects FO to have a stronger CR reduction effect for banks with foreign board members. Thus, we propose the following hypothesis:

H2. The negative effect of FO on bank credit risk will be stronger for banks with foreign board members.

2.2.2 Concentrated ownership and credit risk. According to the agency theory (Ross, 1973; Jensen and Meckling, 1976), OC gives large shareholders the power and means to achieve goals that conflict with the interests of other shareholders. In the bank context, bank

management with high concentrated ownership is under pressure from the large shareholders to undertake business activities that can increase business efficiency in the short term. This pressure may lead managers to focus on new loans with higher risks, thus increasing the bank's CR.

Empirical evidence has been found supporting this theoretical view (AlHares *et al.*, 2018; Vo and Mai, 2020; Mili and Alaali, 2023). In the context of Vietnamese bank; therefore, we propose the following hypothesis:

H3. OS has a positive impact on the credit risk of Vietnamese commercial banks.

However, there have been empirical studies that have shown the opposite results (Nguyen *et al.*, 2018; Pham and Bui, 2019). That is the reason why we suspect that this relationship may change depending on the influence of regulatory factors. From the agency theory (Ross, 1973; Jensen and Meckling, 1976), we argue that the mechanism of increasing CR will be neutralized if banks strengthen their control and supervision mechanisms. This will contribute to reducing the risky business activities of the operator and help mitigate CR. Therefore, we see that the positive relationship between concentrated ownership, and CR will be less severe when the control and supervision mechanism of banks is strengthened.

In Vietnam, the issue of bank ownership ratio has been legalized and is always closely monitored by the government. However, concentrated credit granting to a group of related customers still frequently occurs. When OC is high, conflicts between owners and managers may lead to negative outcomes, creating risks in business operations and raising CR. Therefore, a banking system with high OC, if not properly monitored, can negatively affect the socio-economic environment. One way to improve the quality of supervision for these banks is to list on stock exchanges. Publicly listed banks are subject to continuous monitoring by analysts, investors and regulators. Yu (2008) and Barry *et al.* (2011) argued that compliance with the supervisory mechanisms when listing had contributed to minimizing the risks in business activities of bank managers. When listed, almost all activities require high transparency, so shareholders have a basis to evaluate and comment on risk management and measurement for stakeholders. Therefore, listing would limit the organization's operations in a way that serves the interests of major shareholders. In order to determine how concentrated ownership affects CR differently for listed and unlisted banks, the model incorporates an interaction variable between OC and listing status. Based on the above arguments, we formulated the following research hypothesis:

H4. The positive effect of OC on bank credit risk will be weaker for banks listed on the stock market.

Another type of OS has not been well studied in the literature in SO. Why it is not the focus of this study, we also examine this because SO is typical in the Vietnamese context.

According to stewardship theory (Donaldson and Davis, 1991), if there is no conflict of interest between the manager and the owner, then the decisions of managers are all aimed at serving the common goals of the organization and thereby bringing practical benefits to the owners. Managers can protect their interests by maximizing the interests of shareholders. Therefore, managers always make decisions to achieve the best financial performance and minimize risks in business operations. This theory supports the appointment of one person for the position of chairman of the board and chief executive officer. Many empirical studies have also shown that privately owned banks have higher CR than state-owned banks (SOBs) (Hussain *et al.*, 2018; Tran *et al.*, 2018; Pham and Bui, 2019; Pham *et al.*, 2024). In contrast, some studies have found that SOBs positively impact CR (Ehsan and Javid, 2018; Meslier *et al.*, 2020; Risfandy *et al.*, 2020; Than and Vo, 2020; Moudud-Ul-Huq *et al.*, 2022).

In joint-stock commercial banks, the Board of Directors represents the shareholders and supervises the activities of the executive board, ensuring that the decisions made are reasonable and in compliance with the law. According to Dogan and Ekay (2020), the Board of Directors plays a central role in formulating strategies and supervising the management team,

contributing significantly to the soundness, safety and stability of each bank as well as the entire banking system. In Vietnam, SOBs all have CEOs, who are members of the Board of Directors. This makes strategic decisions more effective because there is no conflict of interest. This contributes to ensuring the goal of stabilizing the entire banking system for the overall development of the economy, including the goal of limiting the non-performing loan ratio. Therefore, the next hypothesis aims to retest the impact of SO on CR in the context of Vietnam. In light of the above arguments, the research hypothesis regarding the impact of SO is formulated as follows:

H5. SO has a negative impact on the credit risk of Vietnamese commercial banks.

3. Research methodology

3.1 Data

The study collected bank-specific data from the audited financial statements of 28 Vietnamese commercial banks, while macroeconomic data were sourced from the Asian Development Bank's statistical database system for the period 2009–2023.

3.2 Measure variables

3.2.1 Ownership structure (OS). This article employed the following variables: SO, FO and OC to represent OS.

Similar to Boubakri *et al.* (2013), Khaw *et al*. (2016) and Tran (2020), SO was measured by the percentage of SO in banks. FO was measured by the percentage of foreign shareholders' ownership in banks (Vo and Mai, 2017; Nguyen *et al.*, 2020; Tran, 2020). OC was represented by the ownership ratio of the largest shareholder in the bank (Wen and Jia 2010; Agusman *et al.*, 2014).

3.2.2 Credit risk (CR). A high non-performing loan ratio indicates ineffective lending quality. When a bank's non-performing loan ratio increases, its credit activities yield lower results, negatively affecting the bank's reputation and competitiveness. Therefore, banks are keen on minimizing the non-performing loan ratio. The article used the ratio of non-performing loans to total outstanding loans to represent the bank's CR (Kolapo *et al.*, 2012; Nguyen *et al.*, 2018).

3.2.3 Interaction variables. To assess the impact of foreign leadership and listing status on the relationship between OS and CR, the study incorporated interaction variables OC × FO_LEADER and OC × LIST into the regression model. The FO_LEADER dummy variable took the value of 1 for banks with foreign board members and zero otherwise. The LIST dummy variable took the value of 1 for banks listed on the Ho Chi Minh Stock Exchange (HOSE) or Hanoi Stock Exchange and zero otherwise.

By using two interaction variables as research variables in the model, the study further examines the impact of foreign leadership and listing status on the relationship between OS and CR. These interaction variables represent specific moderators in the new theoretical contribution related to the research topic.

3.2.4 Control variables. The study included several control variables at both the bank and macroeconomic levels that may affect the bank's financial stability:

Bank size (SIZE): Total assets represent the scale of the bank; larger assets indicate a larger scale of operations. This is a critical criterion for assessing a bank's financial strength in international practices. In this study, asset size was evaluated using the natural logarithm of total bank assets to normalize differences between banks. Tabak *et al.* (2012) found a negative relationship between CR and bank size.

Equity ratio (EA): EA is the ratio of equity to total assets. This indicates the bank's ability to absorb losses and maintain stability during shock. Jabra *et al.* (2017) reported an inverse

relationship between EA and CR, while Ayaydin and Karakaya (2014) showed a positive impact on CR.

Economic growth (GDP): The growth rate of gross domestic product (GDP). Rising GDP can boost borrowers' income and thereby help reduce non-performing loans. This means that non-performing loans in banks often move in the opposite direction to GDP growth (Messai and Jouini, 2013).

Inflation (INF): The inflation rate. Boyd *et al.* (2001) highlighted inflation's impact on lending and financial market activities. With higher inflation, banks may respond by increasing interest rates, leading to a decline in customers' debt repayment resources (Castro, 2013). See Table 1.

3.3 Research model

Based on the stewardship theory (Donaldson and Davis, 1991), the "global advantage" hypothesis (Berger *et al.*, 2000), the agency theory (Ross, 1973; Jensen and Meckling, 1976) and some empirical studies (Nguyen *et al.*, 2018; Liu *et al.*, 2020), as well as the current situation at Vietnamese commercial banks, the authors propose a specific research model as follows:

Table 1. Variables used in regression analysis

Variables	Variables name	Definition	References
Dependent variables			
CR	Credit risk	Non-performing loan/Total outstanding loans	Kolapo *et al.* (2012) and Nguyen *et al.* (2018)
Independent variable			
Research variables			
SO	State ownership	The percentage of state ownership in banks	Boubakri *et al.* (2013), Khaw *et al.* (2016) and Tran (2020)
FO	Foreign ownership	The percentage of foreign shareholders' ownership in banks	Vo and Mai (2017), Nguyen *et al.* (2020) and Tran (2020)
OC	Ownership concentration	The ownership ratio of the largest shareholder in banks	Wen and Jia (2010) and Agusman *et al.* (2014)
OC × FO_LEADER	Interactive variable	FO_LEADER: A dummy variable that equals 1 if banks have foreign board members and zero otherwise	Authors' proposal
OC × LIST	Interactive variable	LIST: A dummy variable that equals 1 if banks are listed on the HOSE or HNX and zero otherwise	
Control variables			
SIZE	Bank size	The natural logarithm of total assets	Tabak *et al.* (2012)
EA	Equity ratio	Equity/Total assets	Ayaydin and Karakaya (2014) and Jabra *et al.* (2017)
GDP	Economic growth	The growth rate of GDP	Messai and Jouini (2013)
INF	Inflation	The inflation rate	Boyd *et al.* (2001) and Castro (2013)

Source(s): Synthesized by the author group (2024)

$$CR_{i,t} = \alpha + CR_{i,t-1} + \beta OS_{i,t} + \eta' X_{i,t} + \rho' C_t + \chi_{i,t} + \varepsilon_{i,t}$$

Where:

i, t: Symbols denoting bank and time (measured in years), respectively;

α: Constant;

β, η, ρ: Coefficients of independent variables in the model;

$\varepsilon_{i,t}$: Error term;

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

C_t: Vector of control variables at the macroeconomic level, such as economic growth and inflation and

OS $\chi_{i,t}$: Includes a series of interactive variables between and moderating factors.

3.4 Estimation method

The article utilized panel data, employing a fixed effects model (FEM) and random effects model (REM) for estimation. Model selection between FEM and REM was determined using the Hausman test to ensure robust results.

Additionally, the study conducted essential tests to detect model assumption violations, including autocorrelation, heteroskedasticity and endogeneity. In the case of autocorrelation and heteroskedasticity, the generalized least squares method is applied. For the model with endogeneity, the study employed the system-generalized method of moments (S-GMM) approach. These methods contributed to robust and efficient estimates, ensuring consistent and accurate results.

4. Results and discussions

4.1 Descriptive statistics

Descriptive statistics in Table 2 for the entire sample indicate an average CR of approximately 2.143%, with the highest value at 5.22%. The average values for SO, FO and OC are 13.633%, 10.185% and 23.427%, respectively. Regarding control variables, the sample shows a mean SIZE of 5.124 and an average equity ratio (EA) of 8.944% of total assets. Vietnam's average GDP growth rate and inflation rate are recorded at 5.799 and 5.443%, respectively.

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
CR (%)	415	2.143	1.123	0.630	5.220
SO (%)	415	13.633	30.746	0	97.180
FO (%)	415	10.185	11.644	0	30
OC (%)	415	23.427	27.806	4.000	97.180
SIZE	415	5.124	0.550	3.522	6.362
EA (%)	415	8.944	3.493	4.660	16.970
GDP (%)	415	5.799	1.440	2.560	8.020
INF (%)	415	5.443	4.304	0.600	18.600

Source(s): Compilation and analysis by the authors using Stata software

4.2 Correlation matrix

A correlation analysis (Table 3) reveals low correlations among explanatory variables in the model.

4.3 Ownership structure and bank credit risk

Table 4 presents estimation results testing hypotheses H1, H3 and H5. The Hausman test indicated that the REM model is most suitable for the sample at the 5% significance level. Subsequently, the study tested for model assumptions, with Wooldridge and White's tests showing significant autocorrelation and heteroskedasticity for REM. Addressing endogeneity using two-staged least squares with instrumental variables and the Durbin–Wu–Hausman test, the study confirmed endogeneity in SIZE, EA and INF (p-value <0.05). Consequently, S-GMM was employed.

In Column (2) of Table 4, results indicated that SO and FO negatively impact CR, while OC had a positive effect. Regression coefficients for FO, OC and SO are −0.011, 0.016 and −0.016, respectively; all are statistically significant. These findings supported hypotheses H1, H3 and H5.

Table 3. Correlation matrix

Variable	CR	SO	FO	OC	SIZE	EA	GDP	INF
CR	1.000							
SO	−0.035	1.000						
FO	−0.296	−0.021	1.000					
OC	0.027	0.950	−0.063	1.000				
SIZE	−0.241	0.575	0.406	0.481	1.000			
EA	0.145	−0.378	−0.044	−0.314	−0.584	1.000		
GDP	−0.010	0.002	−0.050	0.004	−0.050	−0.029	1.000	
INF	0.215	0.001	−0.156	0.006	−0.268	0.213	0.043	1.000

Source(s): Compilation and analysis by the authors using Stata software

Table 4. Impact of ownership structure on bank credit risk

	CR	
	REM (1)	S-GMM (2)
SO	−0.016	−0.016***
FO	−0.025***	−0.011***
OC	0.018	0.016***
SIZE	0.074	−0.306
EA	0.030	−0.030
GDP	−0.021	0.008
INF	0.044***	0.118***
Lagged (−1)		0.285***
p-value of Hausman test	0.949	
p-value of Wooldridge test	<0.001	
p-value of White's test	<0.001	
p-value of Hansen test		0.584
p-value of AR (1) test		0.011
p-value of AR (2) test		0.604

Note(s): 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(s): Authors' compilation and analysis using Stata software

Regarding FO, research shows an inverse relationship with CR, aligning with the findings of Ehsan and Javid (2018) and Yuan *et al.* (2022). Increased FO enhances bank efficiency through initiatives such as employee training, culture and technological advancements. Additionally, foreign equity influx introduces new experiences and technologies from international experts and institutions, thereby minimizing CR in domestic commercial banks.

Regarding OC, research findings corroborate those of Hou *et al.* (2016). The structure of major shareholders significantly influenced a bank's CR. Currently, inadequate inspection and supervision quality contribute to scenarios where powerful shareholders dominate credit activities, leading to directed lending and high-risk investments. Major shareholders may pressure bank executives into pursuing high-risk, short-term profitable projects, increasing overall CR.

Regarding SO, research findings indicated that SO effectively reduces banks' CR, consistent with the results of Hussain *et al.* (2018). SOBs in Vietnam maintained extensive connections and collaborated with numerous large banks and reputable financial institutions worldwide. With substantial total assets and state support, these banks benefit from business limitations and diversified investment portfolios. Hence, SO contributed to mitigate CR in commercial banks.

Considering control variables, macroeconomic conditions notably impact CR. Specifically, INF positively influenced CR at a statistical significance level of 1%.

The validity of the model was confirmed by the Hansen test (p-value >0.1). In addition, all serial correlation indexes Autoregressive model (AR) (1) were significant at the 5% level (p-value <0.05), while AR (2) showed no correlation (p-value >0.05), affirming the significance of results from the S-GMM.

4.4 Effects of foreign leaders

The results testing Hypothesis H2 are presented in Table 5. To demonstrate the impact of foreign leaders on the relationship between FO and CR we added the FO × FO_LEADER interaction variable to the model. REM was selected as the best fit for the model based on testing, with a significant level of 5%. Subsequently, the authors tested the robustness of the

Table 5. Effect of foreign leaders on the relationship between foreign ownership and bank credit risk

	CR	
	REM (1)	S-GMM (2)
SO	−0.016	−0.019***
FO	−0.025***	−0.011***
OC	0.018	0.012***
FO × FO_LEADER	−0.002	−0.034***
SIZE	0.092	0.921***
EA	0.032	0.065**
GDP	−0.021	0.009
INF	0.044***	0.070***
Lagged (−1)		0.573***
p-value of Hausman test	0.969	
p-value of Wooldridge test	<0.001	
p-value of White's test	<0.001	
p-value of Hansen test		0.255
p-value of AR (1) test		<0.001
p-value of AR (2) test		0.809

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

Source(s): Authors' compilation and analysis using Stata software

research model. The results indicated the presence of autocorrelation, heteroskedasticity and endogeneity. To address these issues, we employed S-GMM.

The results in Column (2) of Table 5 showed that the regression coefficient of FO × FO_LEADER was negative and statistically significant. This result supports Hypothesis H2, indicating that the negative relationship between FO and CR is stronger for banks with foreign board members. This is because foreign leaders often possess expertise, professional skills and international reputations, characterized by management efficiency and effective supervision mechanisms. These qualities not only help banks achieve financial stability and increase capital but also aid in better risk management and CR mitigation.

4.5 Effects of listing

The results of testing Hypothesis H4 are presented in Table 6. To examine the impact of listing on the relationship between OC and CR, we introduced the interaction variable OC × LIST into the regression model. Testing to identify the most suitable model for the research sample revealed that REM is the most appropriate model, significant at a 5% level. Subsequently, the authors tested the research model for potential issues. The results indicated the presence of autocorrelation, heteroskedasticity and endogeneity. To address these issues, we employed S-GMM.

The regression results in Column (2) showed that the coefficient of OC × LIST was negative and statistically significant. This finding supports Hypothesis H4, indicating that the positive relationship between OC and bank CR is less pronounced for banks listed on the stock market.

Listed banks were required to disclose information such as holdings of key figures, financial situation, revenue, costs, strategic direction and development strategy. Therefore, listing not only enhances transparency but also promotes fairness and efficiency in the financial market, thereby mitigating risks for investors. Banks seeking listing must meet stringent financial requirements, demonstrate operational efficiency and establish robust organizational structures due to constant scrutiny from stakeholders. Moreover, stock market listings can alter shareholder structures, potentially diluting the control rights of major

Table 6. Effect of listing on the relationship between ownership structure and bank credit risk

	CR	
	REM (1)	S-GMM (2)
SO	−0.012	−0.018***
FO	−0.023***	−0.026***
OC	0.018*	0.024**
OC × LIST	−0.009**	−0.011**
SIZE	0.095	0.082
EA	0.029	0.042
GDP	−0.020	0.015
INF	0.043***	0.108***
Lagged (−1)		0.196
p-value of Hausman test	0.823	
p-value of Wooldridge test	<0.001	
p-value of White's test	0.010	
p-value of Hansen test		0.658
p-value of AR (1) test		0.041
p-value of AR (2) test		0.618

Note(s): The variable Lagged (−1) represents a one-year time lag of the dependent variable. *, ** and *** denote statistical significance at the 10, 5 or 1% levels, respectively
Source(s): Authors' compilation and analysis using Stata software

shareholders. Consequently, this mitigated the adverse impact of dominant shareholders, thereby reducing the bank's CR.

5. Theoretical and policy implications

5.1 Theoretical implications

This research aimed to empirically test the impact of OS on CR using a sample of 28 Vietnamese commercial banks from the period 2009 to 2023. The findings suggested that SO and FO negatively affected the CR of Vietnamese commercial banks, while OC had a positive impact on CR. In this study, the authors build upon existing theoretical models, making some key theoretical contributions.

First, the "global advantage" perspective suggested that (FOBs) faced lower CR due to their access to advanced technology, a highly skilled workforce and superior risk management practices (Berger *et al*., 2000). However, these advantages may not materialize unless FO translates into actual foreign control. Adding to the literature, we propose a governance mechanism that delegates power and responsibility to foreign shareholders, enabling domestic banks to fully leverage the benefits of the "global advantage" perspective.

Second, agency theory (Ross, 1973; Jensen and Meckling, 1976) posited that concentrated ownership allowed large shareholders to pressure managers into prioritizing new loans with higher risks, thereby increasing the bank's CR. However, we contribute to the literature by arguing that this risk-enhancing mechanism can be neutralized if banks implement stronger control and monitoring systems. Thus, the relationship between concentrated ownership and CR can be altered by the controlling and monitoring mechanisms within banks.

The results indicated that the negative relationship between FO and CR is stronger for banks with foreign board members. Foreign leaders with different nationalities, different cultures and rich life experiences around the world can share international knowledge and experience, which will help accelerate the development of CR management models at Vietnamese commercial banks.

Moreover, listing on the stock market mitigated the positive impact of OC on CR. When listed on the stock exchange, it means that all information and activities of the bank will be made public. Thus, concerns about governance, management, operational safety and the negative status of major shareholders will be limited, thereby contributing to limiting the bank's CR.

5.2 Policy implications

Based on the empirical findings above, we proposed several policy recommendations for adjusting the OS of Vietnamese commercial banks.

Firstly, banks need to pay attention to governance mechanisms oriented towards delegating power and responsibility to foreign shareholders. An effective foreign shareholder policy is to increase the level of foreign investor participation in bank management and operations. Selling shares to foreign strategic investors could be highly beneficial due to their financial capacity and extensive management experience. Strategic shareholders from abroad can appoint experts to the bank's leadership, enhancing management practices, technical support, optimizing risk management processes and bolstering the bank's competitive edge.

Secondly, the State Bank of Vietnam (SBV) should intensify oversight and supervision of bank management activities, scrutinizing the actual capital contributions from related parties and interest groups. Establishing an information system to verify the identities and affiliations of business and individuals with institutions is crucial. Internal control and audit departments within credit institutions must uphold rigorous oversight of the Board of Directors and Executive Board activities. Additionally, expediting the listing process of banks on the stock market is imperative. Banks must enhance operational standards, bolster capital growth and

adhere to criteria stipulated by the Securities Commission. This endeavor demands ongoing inspection, support and guidance from the SBV.

Thirdly, state investment in commercial banks represents a viable and essential long-term investment for economic and social development. This capital infusion serves as leverage to support economic growth. Timely support and oversight from state shareholders enable banks to increase capital during challenging periods and effectively mitigate credit risks.

This study is not without limitations. In fact, the research sample is limited to Vietnamese commercial banks. Therefore, the results may not be generalizable to banks with 100% foreign capital, joint venture banks in Vietnam or banks in other countries. Future research could expand the sample to include different types of banks as well as banks from different countries.

Overall, this study makes some key theoretical contributions to the relationship between OS and CR. The results can support the formulation and adjustment of policies to mitigate bank CR and promote sustainable development.

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