

The Impact of Ownership Structure on Credit Risk of Commercial Banks: An Empirical Study in Vietnam

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Abstract

This study aims to assess the impact of ownership structure of commercial banks on bank credit risk in Vietnam. The authors used the unbalanced table data of 28 commercial banks in the period from 2004 to 2020 with 439 observations. The ratio of loan loss provisioning to loans (CR) is selected as a dependent variable representing credit risk at commercial banks. The regression methods used include: least squares method (OLS), fixed-effect model (FEM), random-effect model (REM) and general least squares method (GLS). The results reveal that, with interaction variable between the ratio of equity to total assets and foreign ownership, the national GDP annual growth rate is negatively associated with credit risk. With the ratio of equity to total assets, the interaction variable between equity and state ownership, and bank size have a significant positive impact on credit risk. In addition, inflation has negligible impact on the credit risk of commercial banks in Vietnam over the research period. The findings of this study suggest that, if foreign-owned banks increase equity capital, there will be a stronger impact on reducing credit risk than other banks. On the other hand, when state-owned commercial banks in Vietnam increase equity, they will have higher credit risk.

Keywords: Commercial Banks, Credit Risk, Ownership Structure, Vietnam

JEL Classification Code: G10, G21, C25

1. Introduction

Commercial banks' business activities always contain many risks. This causes banks to lose assets, reduce actual profits compared to expect or have to spend an extra cost to be able to complete a certain financial operation. Credit activities make up the main source of income for the bank, so credit risk have a great impact on the stability of the bank. This type of risk requires the most attention (Perera et al., 2014), because more than 80% of bank balance sheet items face this type of risk (Van Greuning & Bratanovic, 2009).

One of the reasons for credit risk comes from the high risk-taking behavior of shareholders who own banks. Therefore, the issue of bank ownership is receiving special attention. In particular, the ownership percentage of common shareholders has increased significantly over the years, which implies major changes in capital structure, banking governance issues and the tendency to accept bank risk level includes credit risk. In addition, the rapid increase in equity in a short time has formed cross-ownership and multilateral ownership between banks and businesses and banks and banks. This can lead to many nonperforming loans and systemic risk because of liquidity problems for banks. In that context, in order to provide scientific arguments for promoting the restructuring of Vietnam's commercial banking system in the direction of minimizing credit risk, the authors have studied in depth the impact of ownership structure to credit risk in Vietnamese commercial banks.

On the other hand, relevant empirical and theoretical literature provides conflicting results on the impact of ownership structure on credit risk in banks. Saunders et al. (1990), Lee (2008), Kobeissi and Sun (2010), Amor (2017) say that the larger the factor of foreign ownership, the greater

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the credit risk. However, the research results of Laeven (1999), Agoraki et al. (2011), Ehsan and Javid (2018) provide opposite evidence. Besides, many authors believe that state-owned banks have higher credit risk than other banks (Laeven, 1999; Iannotta et al., 2007; Barry et al., 2011; Srairi, 2013; Lassoued et al., 2016; Sarker & Nahar, 2017; Ehsan & Javid, 2018). In contrast, Saunders et al. (1990) argue that regulatory-controlled banks have lower credit risk. Thus, the controversy about the impact of ownership structure on credit risk at commercial banks has not come to an end. To expand the research to Vietnamese practice, the interaction variables between the equity ratio and the forms of bank ownership are included in the research model. This is a new point of research. In addition, in order to reduce the effects that may interfere with other variables, some control variables are also included in the research model.

The main research method is quantitative analysis. The study uses regression analysis of table data to test the impact of equity and ownership structure on credit risk of 28 Vietnamese commercial banks. During the implementation, the authors use OLS, FEM, REM, and GLS to conduct a number of tests to select the most suitable model. From the research results, the bank managers, policy managers can provide timely solutions to reduce credit risk through adjusting bank ownership structure in the next time.

2. Literature Review

2.1. Theoretical Models

Agency Theory (Jensen & Meckling, 1976)

One of the pioneering studies of the governance implications of the management-property separation that leads to a conflict of interest between managers and shareholders is the study of Jensen and Meckling (1976). According to agency theory, agency costs generally arise due to individuals' self-interest and decision-making based on rational thinking and oriented toward own preferences. With more people involved in decision-making, such as through the separation of ownership and management, agency costs occur due to different preferences and information asymmetries between the owner (principal) and the employed management (agent). Therefore, when there is a separation between ownership and executive rights, a conflict arises. From the point of view of this theory, public-sector managers are less motivated to exert their best efforts than private-sector managers, instead they are more motivated to divert resources for their own benefits. To resolve this conflict, many measures have been applied, including the controlling role of the board of directors. From the political standpoint of state ownership, state-owned banks are ineffective because politicians' policies are aimed at transferring resources in favor of their political position (Shleifer, 1998). Thus, the

agency theory says that, if ownership and management rights are separated, the efficiency of using assets of commercial banks will decrease and credit risks will increase.

Stewardship Theory (Donaldson & Davis, 1991)

Stewardship theory developed by Donaldson and Davis (1991) is a new perspective to understand the existing relationships between ownership and management of the company. This theory arises as an important counterweight to agency theory.

Stewardship theory argues shareholder interests are maximized by shared incumbency of these roles. The executive manager, under this theory, far from being an opportunistic shirker, essentially wants to do a good job, to be a good steward of the corporate assets. Thus, stewardship theory holds that there is no inherent, general problem of executive motivation. Given the absence of an inner motivational problem among executives, there is the question of how far executives can achieve the good corporate performance to which they aspire. Thus, stewardship theory focuses not on motivation of the CEO, but rather facilitative, empowering structures, and holds that fusion of the incumbency of the roles of chair and CEO will enhance effectiveness and produce, as a result, superior returns to shareholders than separation of the roles of chair and CEO. The implications of stewardship theory is that breaking the rule does not in fact produce the adverse consequences feared for corporate performance and returns to shareholders and is actually beneficial.

Ultimately, the question might not be whether agency theory or stewardship theory is the more valid. Each may be valid for some phenomena, but not for others.

2.2. Empirical Studies

The topic of the impact of ownership structure on credit risk of commercial banks has been studied in many countries around the world and gave many different results. Stemming from the specific ownership structure of Vietnamese commercial banks, the authors focused on research overview of two types of ownership structure, including: foreign ownership and state ownership.

The impact of foreign ownership on credit risk has mixed research results. Many research results show that foreign ownership has negative effects on credit risk. Ehsan and Javid (2018) show that a higher proportion of shares held by foreign have a significant negative impact on credit risk. Given the fact that foreign banks were disadvantaged by a number of restrictions, especially in comparison with state banks, the author concludes that foreign banks were the best performers in terms of taking the least credit risk (Laeven, 1999). Agoraki et al. (2011) find that foreign ownership reduces the risk of banks in emerging economies. However,

Saunders et al. (1990), who study banks in the United States in the period 1978–1985 or Lee (2008), who conducts research on commercial banks in Korea in the 1999–2006 period, give opposite results. The reason is determined by the strict regulations of the banking systems in these countries during the research period, so the costs related to the risks will outweigh the possible benefits from taking risks. Meanwhile, Kobeissi and Sun (2010) analyze that foreign owned banks will experience difficulties and challenges in grasping and adapting to specific standards of the domestic market. This will increase operating costs and also increase credit risk. Besides, Amor (2017) says that foreign owned banks often nominate more foreign managers to the bank's governance apparatus, these managers may not fully grasp the information and actual conditions in the local market. Therefore, inappropriate standards and policies can be set, which also indirectly increases bank credit risk.

Many empirical studies show that state-owned banks have poor credit quality and higher credit risk than private banks. Ehsan and Javid (2018) argue that higher proportion of shares held by government has a positive significant impact on credit risk. Besides being favored in terms of having fewer restrictions and more lax regulation, it is a possible explanation for the result that state-owned banks took relatively credit risk (Laeven, 1999). Similarly, research results of Iannotta et al. (2007) at European commercial banks, Srairi (2013) in 10 countries in MENA, Sarker and Nahar (2017) at Bangladeshi commercial banks, show that public-sector banks have poor loan quality and higher risk of insolvency than other types of banks. This is partly due to the exacerbation of the agency problem in state-owned banks, especially in economies with lax regulatory. This reduces the motivation for managers and they show less effort than their private bank peers. As a result, they are willing to shift funds to high-risk projects for personal gain (Barry et al., 2011). In contrast, Saunders et al. (1990) argue that banks owned by shareholders have higher credit risk tolerance than banks controlled by regulators. To account for this result, it is hypothesized that banks controlled by shareholders will exercise incentives in lending to maximize value and thereby accept high credit risk than banks controlled by the regulator.

In these studies, the authors mostly use indicators such as the ratio of nonperforming loans-to-total loans (Lee, 2008; Srairi, 2013; Sarker & Nahar, 2017), and the ratio of loan loss provisioning to loans (Laeven, 1999; Iannotta et al., 2007) to make the independent variable representing credit risk. Ownership structure is measured by several aspects: nature of owner and concentration of ownership (Srairi, 2013); set dummy variables for family, corporate, state or foreign banks (Laeven, 1999; Iannotta et al., 2007; Srairi, 2013, Sarker & Nahar, 2017); set dummy variables for domestic or foreign owned banks (Lee, 2008);

percentage of shares held by bank managers (Saunders et al., 1990); equity ratio of the state and foreign factors in banks (Lassoued et al., 2016). The estimation model used in the studies includes: Data Envelopment Analysis (DEA), censored regression model, OLS, FEM, REM, Two Stage Ordinary Least Squares (2SLS).

An overview of studies can reveal that the topic of ownership structure's impact on bank credit risk has not been unified. On the other hand, in order to expand the research for Vietnamese practices, the authors further examined the impact of the increase in equity in Vietnamese commercial banks with state and foreign ownership on credit risk. From the research results, the article gives some recommendations for the bank managers, the State Bank and the Government to minimize credit risks by adjusting the appropriate bank ownership structure.

3. Methodology and Data

3.1. Methodology

To test the impact of ownership structure on credit risk, the article uses the following regression models: OLS, FEM, REM and GLS. Then, it performs some necessary tests to choose the most suitable and reliable model.

The dependent variable – credit risk – is measured by the ratio of loan loss provisioning to loans (CR) (Le & Diep, 2020; Isnurhadi et al., 2021). CR shows how many percent of the bank's credit loss provisioning accounts for the total outstanding loans. This index reflects the quality of credit activity. High loss provisioning means low quality loans and high credit risk.

Ownership structure can be understood as the distribution of equity according to the shareholding ratio of related parties (Manna et al., 2016). Ownership structure is measured by dummy variables including state-owned (State) and foreign-owned (Foreign). These variables have also been used extensively in previous studies (Laeven, 1999; Iannotta et al., 2007; Srairi, 2013, Sarker & Nahar, 2017). A new feature of the study is the implementation of the test when banks have different ownership structures, how the change in equity will affect credit risk. The interaction variables between the ratio of equity to total assets (EA) and the form of bank ownership are included in the research model to test for this. The interactive variables include EA * State, EA * Foreign.

+ EA * State: Many studies show that government intervention in the form of controls seriously affects bank credit risk. Research results of Iannotta et al (2007) at European commercial banks, Srairi (2013) in 10 MENA countries, and Sarker and Nahar (2017) at Bangladeshi commercial banks show that state-owned banks have credit risk higher than other banks. The interactive variable EA*State is included in the model to test for commercial

banks have state equity over 50%, how the increase in equity will affect credit risk.

+ EA * Foreign: In Vietnam, the equitization has been carried out since 1992, showing that private and foreign ownership has played a key role in improving Vietnam's economy. In October 2011, the 3rd Central Conference of Session XI decided to restructure the economy until 2020. Equitization and attracting foreign investment capital have become the issues of concern in Vietnam today. However, the reality shows that the banks after the merger and equitization have not shown any signs of recovery, the nonperforming loans handling ratio is still low, mainly in technical nature but not fully resolved. This will risk affecting the goals set at a later stage and the quality of improvements of banks after restructuring. Lee (2008) or Saunders et al (1990) argued that the larger the factor banks with foreign ownership, the greater the risk. On the other hand, the research results of Laeven (1999) provide opposite evidence. The interactive variable EA * Foreign is included in the model to test for commercial banks have strategic partners that are foreign financial corporations, how the increase in equity will affect credit risk.

Besides the research variables, the authors also use other factors that affect the bank's credit risk as control variables in the research model. The national GDP annual growth rate represents the annual change in GDP, thereby reflecting the state of the economic cycle. When the economy achieves good growth, the demand for borrowing and lending increases and can affect credit risk. Inflation will have a significant impact on the banks' ability to pay interest and repay debts through many different channels. Hence, the impact of inflation on credit risk can be either the same direction or the opposite direction. Accordingly, the macro factors used by the authors include the national GDP annual growth rate (GDPG) (Iannotta et al., 2007; Lee & Hsieh, 2013; Isnurhadi et al., 2021; Pham, 2021) and the annual inflation rate based on the consumer price index (INF) (Lee & Hsieh, 2013; Isnurhadi et al., 2021; Pham, 2021). Along with macroeconomic factors, other internal factors such as bank size (SIZE), equity ratio are also important indicators affecting credit risk. Theoretically, the big bank always wants a low level of risk and it can afford to hold the best diversified loan portfolio, in order to keep the risk as low as possible. EA reflects banks' ability to withstand financial losses or risk risks. A bank with a high EA can proactively handle credit risk and reduce the risk of insolvency, reduce the need for external financing, and then deliver higher returns. Furthermore, a bank with high equity is also likely to attract many business opportunities. Most studies have used the natural logarithm of total assets to represent bank size in the research models. Experimental studies have shown conflicting results in the impact of bank size on credit risk (Iannotta et al., 2007; Bouheni & Rachdi, 2015;

Moudud-ul-huq et al., 2020; Isnurhadi et al., 2021; Pham, 2021). The ratio of equity to total assets is used in many studies in different countries to represent bank equity (Iannotta et al., 2007; Altunbas et al., 2007; Lee & Hsieh, 2013; Bouheni & Rachdi, 2015; Isnurhadi et al., 2021).

Based on the literature review and the current situation at Vietnamese commercial banks, the authors design a specific research model as follows:

$$\begin{aligned} CR_{it} = & \alpha_{it} + \beta_1 EA_{it} * State_{it} + \beta_2 EA_{it} * Foreign_{it} \\ & + \beta_3 EA_{it} + \beta_4 SIZE_{it} + \beta_5 GDPG_t \\ & + \beta_6 INF_t + e_{it} \end{aligned}$$

($i = 1, 2, \dots, 28$ and $t = 2004 - 2020$)

3.2. Data

Specific data of banks are obtained from the Statistics of Bank Management for each year, from 2004 to 2020. Macroeconomic data are collected from the Asian Development Bank's Statistical Database System for the period 2004–2020. To test the impact of ownership structure on bank credit risk, the study uses the following models: OLS, FEM, REM, GLS. In addition, a number of necessary tests are performed to detect violations of model assumptions and select the most suitable and reliable model. The study uses Stata statistical software to process regression results.

Table 2 describes the total number of observed samples, mean value, standard deviation, maximum value, and minimum value of the variables over a 17-year period (2004–2020) in which, Vietinbank had the smallest CR value in 2006. The highest CR value belonged to Agribank in 2004 at 5.62%. Equity accounts for a small proportion of the total assets of Vietnam's commercial banks (9.66%) and there is quite a large variation among banks (standard deviation is 4.48%).

4. Results and Discussion

4.1. Empirical Results

To find out the impact of ownership structure on credit risk at Vietnamese commercial banks, the study makes model estimates including: OLS, FEM, REM and GLS. Table 3 presents the estimated results of the research model. The *F*-test (p -value < 0.05), the Breusch-Pagan test (p -value < 0.05) and the Hausman test (p -value > 0.05) show that REM is the most suitable model with 5% significance level. Next, the authors test the defects of the research model. The Wooldridge test and the White's test (p -value < 0.05) show that there is autocorrelation and heteroskedasticity with REM. Therefore, the REM regression results are not really effective and reliable.

Table 1: Variables Used to Regression Analysis

Variables	Definition		Expectation Mark
Dependent Variables			
CR	Loan loss provision/loans. The loan loss provision is a proxy to see the default bank customers.		
Explanatory Variables			
EA * State	Interactive variable	State – A dummy variable that equals 1 if commercial banks have state equity over 50%, and zero otherwise.	+
EA * Foreign	Interactive variable	Foreign – A dummy variable that equals 1 if commercial banks have strategic partners that are foreign financial corporations, and zero otherwise.	–
EA	Equity/total assets		+
SIZE	The natural logarithm of total assets is the level of bank size		+
GDPG	The annual real GDP growth rate		–
INF	The annual inflation rate based on the consumer price index		–

Table 2: Descriptive Statistics

Variables	Obs.	Mean	Std.Dev.	Min	Max
CR	439	1.23	0.69	0.01	5.62
EA	439	9.66	4.48	4.54	21.51
SIZE	439	4.83	0.69	2.66	6.17
GDPG	439	6.18	1.11	2.91	7.80
INF	439	7.30	5.71	0.6	23.10

To correct the autocorrelation and heteroskedasticity, the study uses the GLS regression. This will provide more efficient linear estimates (Table 3). Therefore, the results of regression analysis according to GLS will be used to explain the correlation between the variables in the model. Treatment of defects by GLS regression shows that most of the variables are statistically significant.

4.2. Discussion

The ratio of equity to total assets has a positive impact on the credit risk of commercial banks in Vietnam. This result is similar to the study of Altunbas et al. (2007) and supports the theory of management. According to this theory, managers often require banks to increase equity in proportion to their credit risk, so the relationship between bank equity and credit risk is determined to be in the same direction. It can be seen that an important factor contributing to the positive

Table 3: Regression Analysis

Variables	REM	GLS
EA	0.0112	0.0174***
EA* State	0.0766***	0.0820***
EA* Foreign	–0.0118	–0.0110***
SIZE	0.4298***	0.4371***
GDPG	–0.0315	–0.0518**
INF	0.0135***	0.0039
R ²	0.2745	
F-test	0.0000	
Breusch-Pagan test	0.0000	
Hausman test	0.7385	
Wooldridge test	0.0014	
White's test	0.0026	

Note: *, ** and *** indicate statistical significance at the 10, 5, or 1% significance level, respectively.

relationship between equity and credit risk is the actions of regulators and supervisors.

The research results show that state-owned commercial banks in Vietnam will have higher credit risks than other banks if they increase equity. This result coincides with the agency theory of Jensen and Meckling (1976). This result also reflects the fact that in Vietnam, state-owned banks have to perform a number of tasks for the Government. These tasks are not purely business with the goal of maximizing profits.

According to the Vietnam Banking Industry Development Strategy to 2025, with a vision to 2030, the State wants to keep 65% of equity, so if the private or foreign sector participates, the equity will increase. The State has to spend more money to keep this ratio, otherwise it will automatically decrease. In Vietnam, the majority of large corporations with many advantages in borrowing relationship are state-owned groups with low business efficiency. These businesses are often given loans from state-owned banks, and banks must bear risks if these businesses are in financial trouble. Banks have to simplify their procedures if large state-owned enterprises take out loans, and this poses a potential credit risk. This is evidence of the government's protection of state-owned commercial banks, leading to three problems in banks – relationship-based lending, moral hazard, and excess capacity.

In addition, commercial banks with natural ownership will be interested in investing in areas with higher returns and lower risks than state-owned commercial banks. Natural shareholders will directly manage and use their own capital, and directly suffer losses of arising risks, so they will be more cautious in making investment decisions as well as exercising stricter supervision. This leads to lower credit risk when increasing equity in these banks.

Faced with the need to attract equity and management skills from foreign experienced financial institutions, the State Bank encourages domestic commercial banks to seek foreign partners as strategic shareholders. The research results also show that if foreign-owned banks increase equity, they will reduce credit risk more than other commercial banks. This is explained that the presence of foreign investors has enhanced governance capacity and has reduced credit risk at Vietnamese commercial banks.

Bank size (SIZE) has statistical significance and positive impact on credit risk, which is explained by the fact that large banks are more exposed to risk in lending. In addition, large banks often experience a period of rapid growth. To a certain stage, the growth will exceed the management capacity of the operating system, potentially higher risks than banks with moderate scale and high flexibility.

The results show an inverse relationship between GDPG and CR of Vietnamese commercial banks. If the economy is in a state of good growth, the business performance of actors in the economy will be better. This increases the ability to repay principal and interest on time for the bank and contributes to reducing credit risk.

The research results show that inflation has negligible impact on the credit risk of commercial banks in Vietnam in the research period. This result can be explained by the fact that inflation does not immediately affect credit risk but needs a certain lag. Therefore, in this period we cannot find a significant correlation between the current year inflation rate and bank credit risk.

5. Conclusion and Policy Implications

The regression results conclude that the credit risk of Vietnamese commercial banks has a positive relationship with the ratio of equity to assets. If foreign-owned banks increase their equity ratio, it will have a stronger impact on reducing credit risk compared to other banks. Conversely, if state-owned commercial banks in Vietnam increase equity, they will have higher credit risk.

The policy implication is to encourage policymakers to rethink government ownership over banks. It is necessary to consider reducing the rate of state ownership in state-owned banks to a level lower than the current regulations. Selling shares or gradually reducing state ownership is in line with the requirement of improving financial capacity. To meet the capital adequacy standards of Basel II without increasing the state's ownership, banks can increase equity by paying dividends at the rate of 50% in cash and 50% retained earnings. On the other hand, banks can increase tier 2 capital and issue convertible bonds. Therefore, the denationalization or reducing government ownership structure is highly recommended.

In fact, at banks with foreign strategic shareholders, the role of this group has a great influence on the bank's operations. In particular, they have made the bank's operations more transparent and closer to international practices. Listing of securities will help banks reach a broader investor base. Since then, there are many conditions to increase equity from existing shareholders, individual investors and international investors.

Research results show that bank size has a positive relationship with credit risk. Therefore, commercial banks need to have a suitable roadmap for the process of expanding the bank's scale. If the size of the bank increases, the increase in credit risk should be within the control of the bank.

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