CORPORATE GOVERNANCE AND BANK RISK-TAKING: EVIDENCE FROM VIETNAM

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ABSTRACT

Vietnam's financial system has evolved rapidly over the last few decades, which requires more scrutiny on bank risk management to prevent contagion effects and ensure the system safety and soundness. Previous international studies have shown that corporate governance is one of the important factors that influence the level of bank risk-taking. However, there is still a lack of research on this issue in Vietnam. The objective of this study is to provide empirical evidence on how boards of directors, one important internal governance mechanism, can affect the level of bank risk. Using a sample of 21 listed commercial banks in Vietnam over the period 2007-2022, this research finds that board size, the education level of board directors and the representation of women directors have negative impacts on bank risk-taking. These results provide some implications for bank management and policy makers.

TÓM TẮT

Trong những năm vừa qua, hệ thống tài chính của Việt Nam phát triển một cách mạnh mẽ cả về quy mô và chất lượng. Điều này đòi hỏi các nhà quản lý nâng cao hơn nữa việc quản trị rủi ro ngân hàng nhằm đảm bảo sự an toàn và lành mạnh của hệ thống tài chính. Các nghiên cứu quốc tế trước đây đã chỉ ra rằng quản trị tài chính là một yếu tố quan trọng quyết định đến mức độ rủi ro của ngân hàng. Tuy nhiên, theo hiểu biết của tác giả, vẫn chưa có nghiên cứu nào đi sâu vào vấn đề này ở Việt Nam. Do đó, mục đích của nghiên cứu này là cung cấp bằng chứng thực nghiệm về vai trò của Hội đồng quản trị (HĐQT) đối với rủi ro ngân hàng. Bằng việc thu thập dữ liệu của 21 ngân hàng thương mại niêm yết, nghiên cứu đã chỉ ra rằng quy mô của HĐQT, trình độ học vấn của thành viên và tỷ lệ nữ giới trong HĐQT đều có vai trò làm giảm rủi ro của ngân hàng. Kết quả nghiên cứu này có thể được ứng dụng trong việc quản trị rủi ro của các ngân hàng thương mại tại Việt Nam.

1. INTRODUCTION

Following the 2008 global financial crisis (GFC), there has been significant focus on the corporate governance of banks, as it is believed that weak governance within these institutions played a major role in causing the crisis (Adams and Mehran, 2012). The Basel Committee on Banking Supervision (BCBS) acknowledged the governance failures within banks during the crisis and emphasized the vital importance of strong bank corporate governance in ensuring financial stability and promoting economic development. As a result, there has been great attention from both academia and regulatory bodies on discovering the relationship between corporate governance and bank risk-taking and the degree to which weak governance resulted in the excessive level of risks taken by banks.

Among a number of internal corporate governance mechanisms, boards of directors play a critical role in monitoring and advising management to protect shareholder interests (De Andres & Vallelado, 2008; Francis, Hasan, & Wu, 2012) and contributing to effective governance (Pathan & Faff, 2013). According to BCBS (2015), boards of directors play a crucial role in overseeing risk management and making decisions related to risk. Their responsibilities begin with shaping the risk-related culture and implementing procedures to comprehend the nature and extent of operational risk associated with banking operations. Given the important role of the board of directors, there have been a large number of studies examining the impact of the board of directors on bank risk-taking (Pathan, 2009; Berger, Kick and Schaeck, 2014; Srivastav and Hagendorff, 2016).

In the context of Vietnam, the financial system in general and the banking system in particular have evolved dramatically over the last few decades and integrated more into the global market. This rapid development places more pressure on improving the risk management practices of Vietnamese banks in order to avoid contagion effects on the entire financial system. Although boards of directors in Vietnamese banks have attracted great interests from academia, the majority of research mainly focus on how board composition determines bank performance while there is little research on their impacts on bank risk-taking. To fill the gap in the literature, this paper aims to analyze the link between boards of directors, an apex of the internal governance system, and the level of bank risk in Vietnam. Using a sample of 21 listed commercial banks in Vietnam over the period 2017-2022, this paper finds that boards of directors with larger size, higher level of education and more female representation are associated with lower level of risk. These finding have some implications for bank management and regulations.

2. RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

According to agency theorists, managers and shareholders often have different attitudes toward risk. Managers, who possess undiversified wealth, are generally more risk-averse, whereas shareholders, with diversified portfolios, tend to encourage managers to take more risks to maximize returns (Eisenhardt, 1989; Sanders & Hambrick, 2007).

Based on agency theory predictions, extensive research has explored how corporate governance mechanisms influence corporate risk-taking. These mechanisms include managerial compensation (Coles et al., 2006; Sanders & Hambrick, 2007) and shareholder ownership diversification (Faccio et al., 2011; Laeven & Levine, 2009). The board of directors, as another essential internal governance mechanism, also significantly affects a firm's risk-taking behavior (Sila et al., 2016).

Numerous studies have investigated the effects of different board characteristics on corporate risk-taking. For instance, Cheng (2008),

using US data from 1996 to 2004, found an inverse relationship between board size and both accounting and market-based performance volatility, suggesting that larger boards help mitigate firm risk exposure. Similarly, Nakano and Nguyen (2012) discovered that board size is negatively correlated with performance volatility and bankruptcy risk in Japanese firms. In the banking sector, Pathan (2009) demonstrated a positive impact of strong boards (small and less restrictive boards) on various bank risk measures. Strong boards are defined as those that prioritize shareholders' interests, leading to higher levels of bank risk-taking since shareholders prefer greater risks.

Furthermore, Elyasiani and Zhang (2015), examining the influences of busy boards of directors (directors serving on multiple boards) on bank holding company performance and risk, found that busy directors with more experience, knowledge, and reputation can effectively fulfill their monitoring and advisory roles, resulting in higher performance and lower risk. Berger et al. (2014) argued that executive board age and education level are negatively related to bank risk-taking, while the representation of female executives has a positive impact.

Based on existing literature, we develop hypotheses on the impacts of a number of board attributes on bank risk taking, including board size, board education, board gender diversity and foreign directors.

Board size

Research findings in both financial and non-financial companies show that larger boards tend to lower the extent of risk-taking (Cheng, 2008; Pathan, 2009). The rationale behind this observation is that in firms with bigger boards, the process of cooperation and communication among directors takes more time to reach final decisions, making the decisions less extreme (Cheng, 2008). Consequently, there exists an inverse correlation between board size and the level of risk in the firm. In a similar vein, Pathan (2009) demonstrates that smaller board size is associated with increased levels of risk-taking in banks. This finding is also supported by the study of José García et al. (2022). Therefore, we develop the hypothesis as follows:

H1: Board size is negatively related with bank risk-taking.

Board education

Studies show that executives with different levels of education may have different risk-taking behaviour. For example, the survey of Graham and Harvey (2001) shows that executives with MBA tend to use more sophisticated methods to estimate the cost of capital, resulting in lower level of firm risk. Berger et al. (2014) support this negative impact by finding that the addition of executive directors with PhD degree to the board can lower the ratio of risk weighted asset over total assets, an indicator of risk-taking. Based on these studies, we formulate the following hypothesis:

H2: Board education is negatively associated with bank risk-taking.

Board gender diversity

Empirical evidence of the impacts of women directors on bank risk-taking shows mixed results. Some research demonstrate that women directors can help banks to reduce the level of bank risk (Gulamhussen & Santa, 2015), enhance financial stability (Uyar, et al. 2022) or make less risky decisions (Palvia et al., 2015). These negative impacts may be attributed to the higher risk-aversion attitude among women which is a common finding in the literature (Croson & Gneezy, 2009; Eckel & Grossman, 2008). On the other hand, other studies propose that women board representation indeed increases bank risk-

taking. According to Berger et al. (2014), female executives in banks generally possess less experience than their male counterparts, which leads to an increased level of portfolio risk when female executive directors are appointed. Adams and Ragunathan (2017) support this by demonstrating that banks with more women directors on their boards did not necessarily exhibit lower levels of risk during the global financial crisis. Since the effect of board gender diversity is a prior unclear, we formulate two alternative hypotheses:

H3a: Board gender diversity is positively related with bank risk-taking.

H3b: Board gender diversity is negatively related with bank risk-taking.

Foreign directors

The risk tolerance of individuals may vary according to their culture. Mourouzidou-Damtsa et al. (2019) reveal that highly individualistic countries have higher level of domestic bank-risk taking while trust is negatively related with bank risk-taking. Therefore, it can be assumed that the percentage of foreign directors possibly influence the level of bank risk-taking, though the relationship is still unclear. Therefore, two alternative hypotheses are formulated:

H4a: The percentage of foreign directors is positively associated with bank risk-taking.

H4b: The percentage of foreign directors is negatively associated with bank risk-taking.

3. DATA AND METHODOLOGY

3.1. Data sources

The initial sample consists of all commercial banks listed on the two stock exchanges in Vietnam (HOSE and HNX). Data for this research is collected from a number of sources. Bank financial data for listed commercial banks is extracted from the website www.vietstock.finance.com. The detailed information on the board attributes is manually retrieved from bank annual reports which are downloaded from banks' website. In some cases, there are insufficient information on board directors' education, we look up this data by using Google search.

The final sample consists of 21 listed commercial banks with 321 observations over the period 2007-2022.

3.2. Empirical methodology

The base model to test the impacts of board attributes on bank risk-taking is presented as follow:

$$\text{Bank risk-taking}_{i,t} = \alpha + \sum\beta_j \text{ board variables}^j_{i,t} + \gamma \text{ control variables}_{i,t} + \varepsilon_{i,t} \quad (1)$$

$\text{Bank risk-taking}_{i,t}$ is the bank risk-taking variable for bank i in year t (from 2007 to 2022). The two proxies for bank risk-taking are *ZSCORE* and loan loss provisions ratio. Our primary interest variables are board $\text{variables}^j_{i,t}$, which include board size, board education, board gender diversity and foreign directors. The β parameters indicate the potential impacts of different board characteristics on bank risk-taking. Control variables include bank size, capital ratio and loan ratio. Following previous literature on board characteristics and corporate outcome (Liang et al., 2013; Dezsö & Ross, 2012; Liu et al., 2014), we use OLS regression and fixed-effects regression to run the models.

3.3. Variable measurements

3.3.1. Bank risk-taking

One of the proxy that is mostly used in previous literature to measure bank risk-taking is Z-score. Z-score measures a bank's overall risk by linking a bank's capitalization with its return and risk. It indicates the number of standard deviations of a bank's returns on assets has to drop before the bank becomes insolvent, thus it represents a bank's distance from insolvency (Laeven & Levine,

2009). If a bank has higher value of Z-score, it indicates that the bank has lower probability of bank default and vice versa. Following previous studies in bank risk-taking, this study employs the natural logarithm of Z-score as a measure of the level of bank risk.

This study also uses the loan loss provision ratio (*LLP*), which has been widely used to measure bank asset risk (Barry et al., 2011; Khan et al., 2016, among others). The higher the value of LLP indicates more risky assets held by banks.

3.3.2. Board attribute variables

Following previous literature, we use four proxies representing board characteristics, including board size (BOARDSZ), board education (EDU), board gender diversity (%WOMEN) and foreign directors (%FOREIGN).

3.3.3. Control variables

In line with the relevant literature, we control for a number of variables at bank level (including bank size (BANKSZ), bank capital ratio (CAR) and loan ratio (LOAN) because these variables may have influences on the level of bank risk-taking.

Bank size

In accordance with previous studies on bank board gender diversity (Pathan, 2009; Berger et al., 2014; García-Meca et al., 2015), this study controls for bank size because of its possible impacts on bank risk-taking. For instance, Bhagat et al. (2015) and Laeven et al. (2016) document a positive impact of bank size on the level of risk-taking. The reason is that bigger banks have a tendency to take excessive risks in order to maximize returns since they are more likely to receive government's bail-out in the case of failure.

Bank capital ratio

Berger et al. (2014) claim that bank capital ratio should be controlled when modeling the effects of board gender diversity on bank risk-taking. This is because banks with higher capital ratio would have lower moral hazard incentives, resulting in lower level of risk. Laeven et al. (2016) also uncover an inverse relationship between capital ratio and systematic risk in large deposit-taking institutions from over 50 countries.

Loan ratio

Higher proportion of loans in total assets raises the level of bank risk (García-Herrero et al., 2009). To take into account the potential impact of loan ratio on risk-taking, a number of studies use the total loans to total assets ratio as a control variable (Gulamhussen & Santa, 2015; Khan et al., 2016) and find that loan ratio is positively related with bank risk.

The detailed measurements of the variables used in the models are presented in Table 1.

Table 1. Definitions of variables and data sources

Variables	Definition
Bank-risk-taking variables	
The Z-score (*ZSCORE*)	The Z-score is calculated as $(ROA + CAR)/\sigma(ROA)$ where *ROA* is return on assets, *CAR* is capital-asset ratio, $\sigma(ROA)$ is the standard deviation of *ROA* over five consecutive years. The natural logarithm of the Z-score is used in the models.
Loan loss provision ratio (*LLP*)	The ratio of loan loss provisions to the total of gross loans.

Board attribute variables	
Board education level *(EDU)*	The percentage of directors that have PhD degree.
Board size (BOARDSZ)	The total number of board directors.
Board gender diversity *(%WOMEN)*	The percentage of female directors on the board.
Foreign directors (%FOREIGN)	The percentage of foreign directors on the board.
Control variables	
Bank size (BANKSZ)	The natural logarithm of book value of total assets.
Bank capital (CAR)	The ratio of total equity to total assets.
Asset structure (LOAN)	The ratio of gross loan to total assets.

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics

Table 2. Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
BOARDSZ	321	7.44	1.77	4.00	13.00
EDU	321	0.19	0.13	0	0.71
%WOMEN	321	0.19	0.17	0	0.80
%FOREIGN	321	0.11	0.13	0	0.57
BANKSZ	321	11.78	1.23	7.70	14.57
LOAN	321	0.55	0.13	0.11	0.84
CAR	321	0.09	0.05	0.04	0.42
ZSCORE	320	3.73	2.18	-1.78	38.86
LLP	320	0.01	0.01	-0.01	0.06

Table 2 presents the summary statistics of the key dependent, explanatory and control variables for the whole sample. For bank risk-taking proxies, the mean log Z-score is 3.73, representing that on average, profits need to fall by about 42 standard deviations (exp(3.73) = 41.68) below the mean to deplete equity capital. The mean values of loan loss provision ratio is 1%. The average number of directors in the bank boardroom is approximately 7, varying from 4 directors to 13 directors. On average, about 19% of banks in the sample have directors with PhD degree. The average percentage of female directors and foreign directors on the boards are 19% and 11% respectively.

4.2. Correlation matrix

Table 3 reports the matrix of correlations between variables. The correlation coefficients indicate that board size is negatively correlated with ZSCORE and negatively correlated with *LLP.* Both EDU and %WOMEN are positively correlated with ZSCORE and negatively correlated with LLPR. While %FOREIGN is negatively correlated with ZSCORE, it is positively correlated with LLPR. Multicollinearity is not an issue for the sample because the highest correlation coefficient is 0.54. As a rule of thumb, multicollinearity may exist if the correlation coefficient is greater than 0.8. In addition, an

unreported variation inflation factor (VIF) calculation shows that the average VIF is 1.18 and the maximum VIF is 1.63, which are much lower than the threshold of 10.

Table 3. Correlation matrix between variables

	ZSCORE	LLPR	BOARDSZ	EDU	%WOMEN	%FOREIGN	LOAN	CAR	BANKSZ
ZSCORE	1.00								
LLPR	0.14	1.00							
BOARDSZ	-0.01	-0.03	1.00						
EDU	0.07	-0.02	-0.29	1.00					
%WOMEN	0.14	-0.01	-0.06	-0.02	1.00				
%FOREIGN	-0.07	0.02	0.27	0.00	-0.16	1.00			
LOAN	0.13	0.24	0.05	0.01	0.02	-0.05	1.00		
CAR	-0.02	-0.21	-0.08	-0.10	-0.25	-0.03	-0.16	1.00	
BANKSZ	0.06	0.45	0.29	-0.04	0.07	0.11	0.44	-0.54	1.00

4.3. Results

Table 4 presents the findings on the relationship between board attributes and bank risk-taking for Vietnamese commercial banks using OLS regression (Models (1) and (2)) and fixed-effects regression (Models (3) and (4)). The OLS results indicate that all board variables, except %FOREIGN, have negative impacts on the level of bank risk-taking. Specifically, board size has a significantly positive relationship with ZSCORE at the 10% level and negative relationship with LLPR at the 1% level; therefore, Hypothesis 1 is supported. This indicates that the larger the board, the lower the level of risk taken by the bank. This finding is in line with previous literature (Cheng, 2008; Pathan, 2009) which support the idea that in companies with larger boards, the collaborative and communicative process among directors requires more time to arrive at final decisions, resulting in less risky decisions.

The level of board members' education has shown a significantly positive relationship with ZSCORE at the 5% level and a significantly negative relationship with LLPR at the 1% level. The results support the hypothesis that board members with higher education help reduce the level of bank risk-taking (H2). This finding is in line with the study of Berger et al. (2014) which suggests that directors with PhD degree may have deeper knowledge on bank risk management and influence the banks to employ better risk management practices.

The results also indicate that adding more women directors can reduce the level of bank risk as the coefficients on %WOMEN are positive for ZSCORE and negative for LLPR and both are statistically significant at the 1% level, therefore Hypothesis 3b is supported. The reported negative impacts of the percentage of female directors on different measures of bank risk are consistent with existing studies (Gulamhussen & Santa, 2015, Palvia et al. 2015). This finding can be attributed to the lower level of overconfidence and risk-loving attitude among female directors compared to male directors. In addition, female directors are more stakeholder-oriented (Leung et al., 2019) and thereby, their representation are associated with lower level of risk. The representation of foreign directors are negatively associated with both ZSCORE and LLPR; however, their impacts are statistically insignificant. Therefore, hypotheses 4a and 4b are not supported. The reason is that foreign directors may still be considered as token in Vietnamese bank boards. As a result, they can not exert influences on the board decision making processes and therefore, having no influences on the level of bank risk-taking.

Table 4: Results on the impacts of board characteristics on bank risk-taking

	OLS		FE	
VARIABLES	ZSCORE (1)	LLPR (2)	ZSCORE (3)	LLPR (4)
Constant	-0.416	-0.030***	-2.782	-0.036***
	(1.805)	(0.007)	(2.305)	(0.008)
BOARDSZ	0.135*	-0.0131***	0.0330*	-0.004*
	(0.079)	(0.003)	(0.018)	(0.002)
EDU	2.481**	-0.013***	3.207*	-0.013**
	(1.148)	(0.004)	(1.773)	(0.006)
%WOMEN	2.732***	-0.009***	1.009**	-0.007*
	(0.804)	(0.003)	(0.480)	(0.042)
%FOREIGN	-0.434	-0.003	0.496	-0.002
	(1.064)	(0.004)	(1.665)	(0.006)
BANKSZ	-0.199	0.005***	-0.353*	0.005***
	(0.143)	(0.0005)	(0.199)	(0.0007)
CAR	5.049*	-0.050***	6.147**	-0.039***
	(2.851)	(0.014)	(3.024)	(0.014)
LOAN	1.981	-0.013	1.433	-0.009*
	(1.751)	(0.024)	(1.437)	(0.011)
Observations	304	304	304	304
R-squared	0.73	0.55	0.78	0.66

The table presents the OLS and FE regression results of bank risk-taking (ZSCORE and LLPR) on board composition variables (BOARDSZ, EDU,%WOMEN,%FOREIGN) and other control variables. Robust standard errors are reported in parentheses. *, ** and *** indicate statistical significance at 10%, 5% and 1% respectively.

Regarding control variables, the results suggest that banks in larger banks and well-capitalised banks have lower level of risk. The results in columns (1) and (2) are still held when the fixed-effects models are run (as presented in columns (3) and (4)).

5. CONCLUSION AND RECOMENDATION

The impacts of corporate governance on bank outcomes have become a tropical topic because of the raising attention on the role of bank governance. However, there is still a lack of evidence on how corporate governance, especially boards of directors, may affect the level of bank risk-taking. Using data from 21 listed commercial banks in Vietnam over the period 2007-2022, we provide empirical evidence on the impacts of various board characteristics on bank risks. Specifically, we find that banks with larger boards are associated with lower level of risk. We also find that adding more board directors with PhD degrees and more women directors can lower bank risk-taking. We find no evidence on the impact of foreign directors on the level of bank risk for Vietnamese banks.

Based on the results, this research suggests that banks should take into account the potential impacts of board characteristics on bank risk management as board attributes can have significant impacts on the level of bank risk-taking. Specifically, to contain the level of bank risks, increasing board size or adding more directors with higher degree can be considered.

In addition, banks should enhance the representation of women directors in the boards to contain excessive level of risk. In recent years, many countries have implemented mandatory quotas for the number of women directors in the boardroom. For example, Norway is the first country implementing mandatory quota of at least

40% of each gender in public limited companies' boards in 2008. After that, other countries in Europe such as Iceland, Belgium and France introduced gender quota for board gender diversity. In Asia, quota legislation was implemented in Malaysia in 2011 (at least 30% representation of females in decision-making positions in the private sector) and India in 2013 (at least one woman director on the boardroom of listed companies) (Deloitte, 2017). More recently, a new California law requires public traded companies headquartered in the state to have at least one female director by the end 2019 and the number of women directors will increase to two and three for corporate boards with five members and six or more members respectively by the end of 2021. These quota mandatory policies have contributed significantly to the improvement in women representation in the boardrooms in these countries. Hence, the policy makers in Vietnam can consider this policy for improving the gender diversity in bank boards.

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