

**BANKING RISK AND COUNTRY GOVERNANCE****Hac L.D.\***

**Abstract:** This research aims to investigate the banking risk considered in Vietnam from the perspective of internal causes and government effects in the current period. It also expands on current views on banking risk concerns by investigating the impact of country-specific regulations on banking risk modeling, which has been of interest to a few researchers in Vietnam. The research uses a multivariate regression model on a dataset of 20 commercial banks in Vietnam between 2010 and 2020. With the Z-score representing the Bank's risk, study findings reveal that government influence, regulatory quality and franchise value significantly reduce risk. Other risk considerations for banks include non-interest income, loan growth, regulatory quality and other macro-factors. Furthermore, the author discovered a positive association between bank size and Z-score, which represents the expression "too big to fail" in the Vietnamese market. Therefore, the author makes some recommendations related to measures to improve the governance of the banking system.

**Keywords:** Bank risk, country governance, Z-score, bank risk, Vietnamese Bank

DOI: 10.17512/pjms.2022.25.1.08

*Article history:*

*Received* March 31, 2022; *Revised* April 29, 2022; *Accepted* May 23, 2022

**Introduction**

The global financial crisis of 2008 demonstrated the importance of risk management. It posed a requirement for implementing bank risk management, which drove Vietnamese banks to develop and adopt a better risk management system to prevent the crisis and successfully integrate them. However, many Vietnamese banks either do not manage risks efficiently or thoroughly understand the risks. Many leaders focus on business, profit and revenue rather than risk management. Improving the risk management process would control the board of management and the board of directors strictly and effectively and help integrate the risk management process into the daily decision-making process. In the finance and banking sector, commercial banks play a critical role in the stability and sustainability of the entire economy. As a result of the financial crisis boom, which was accompanied by flaws and failures in the operation of many commercial, national, and operational risk management is becoming a top concern in many countries around the world, ranging from developed countries with advanced financings, such as the United States, Europe, and Japan, to developing countries with infant financial markets, such as Vietnam. Moreover, national governance is the most crucial determinant of macro-competitiveness and growth in an economy. In recent years, the banking system's environment and operational institutions have taken positive steps with notable successes, but they are vulnerable to macroeconomic instability. The stability and soundness of each

---

\* **Le Dinh Hac.**, Dr. Ho Chi Minh University of Banking, Vietnam

✉ corresponding author: hacld@buh.edu.vn.

country's banking system are increasingly important, even for macroeconomic stability. Besides, the banking system in Vietnam has undergone remarkable changes in internal governance, organizational apparatus, technology, and modern banking services. Nevertheless, the instability of the macro-economic system has caused many risks and hurt the banking system in every respect. The banking system is the "victim" of economic instability, and in turn, it is the "perpetrator" of the unrest.

In addition, poor bank governance may cause the Bank's collapse and create a widespread domino effect on the entire economy. Furthermore, poor governance has also caused the public to lose confidence in the banks' ability to manage assets and capital, including the public's deposits, which could trigger a liquidity crisis. In addition to accountability to shareholders, banks are also responsible for their customers' deposits and other stakeholders. Therefore, operations are subject to regulation by strict statutory systems and regular supervision. Good commercial banking management is an effective risk management mechanism because it involves all aspects of a bank's operations. Furthermore, risk management is the foundation for maintaining business operations, a fundamental part of corporate governance. The first step in banking risk management is determining what factors impact a bank's risk.

This paper broadens current opinion lines on bank risk issues by considering the role of national management when modelizing bank risk. The study expects that improving the quality of governance will contribute to a decline in banking risk while other factors remain constant. By reviewing the quality of national management, this study will test a key result: "The Regulation of Bank Capital: Do Capital Standards Promote Bank Safety?" (Besanko & Kanatas, 1996). Likewise, Imbierowicz and Rauch (2014) argue that the simultaneous impact of credit risk and liquidity risk will affect the Bank's stability. The study expects that improving the quality of governance will contribute to a decline in banking risk while other factors remain constant. In addition, this article will provide the benefits of reviewing the impact of operating quality on banking risk. A few studies have also examined the relationship between various banking regulations and bank risks. "Bank Governance, Regulation, and Risk-Taking" (Laeven & Levine, 2009) found that the same regulation will have different impacts on risk depending on the Bank's corporate governance structure. Klomp and de Haan (2011) used data from more than 200 banks to review the impact of regulation and bank supervision on risk. According to most previous studies, bank regulation and oversight impact risk in high-risk banks but have no significant effect on low-risk banks. Then, derived from the reality of Vietnam, the topic selected for the research question is "What is the relationship Banking Risk and National Governance in Vietnamam?." This paper focuses on examining factors, especially country governance, that affect banking risk in Vietnam.

### **Literature Review**

Many studies imply that equity affects a bank's risk, such as Blum (1999), who contends that if raising equity is too expensive, the only option for the Bank to raise

capital is for the Bank to take more risk. In contrast, Lee and Hsieh (2013) found that increasing bank capital is related to decreased bank risk in 42 Asian banks between 1994 and 2008. Williams (2013) investigated the factors influencing banking risk in Indonesia both before and after the Asian financial crisis (1997) and discovered a U-shaped link between bank capital and risk (Calem & Rob, 1999; Jonghe et al., 2007). Nevertheless, Marcus (1984) contends that brand equity diminishes the Bank's ethically dangerous behavior. According to Craine (1995), this value is commonly regarded in the context of the value of a bank acquired via its degree of existing or potential deposit insurance.

The term "too big to fail" was created in 1984, when the U.S. government bailed out Continental Illinois Bank. In a recent study of Asian banks, Fu et al. (2014) found that smaller banks are less dangerous, overcoming the moral hazard associated with being "too big to fail." According to Kocisova et al. (2018), supervisory authorities play a critical role in protecting banking stability by ensuring banks' resilience to shocks, ability to recover their position in response to crises, and, ultimately, supervision authorities help prevent these banks from failing. Thus, the "too big to fail" status causes a negative by allowing the management of larger banks to pick portfolios of greater risk assets, causing harm to other stakeholders (Saunders et al. 1990).

Over the last few decades, the banking revenue base has shifted away from reliance on traditional loan income due to the rise of a wide range of services that generate non-interest income (Allen & Santomero, 2001; Lepetit et al., 2008b). Portfolio diversification (Smith et al., 2003) and the emergence of other institutions that provided financial services were examples of this trend (Diamond, 1984). Revenue diversification in a bank is a solid indicator of a bank's capacity to overcome information gaps and provide efficient decentralized monitoring and vetting services (Diamond, 1984; Ramakrishnan & Thakor, 1984).

Moreover, Jensen (1986) and Berger and Ofek (1996) contend that growing non-interest revenue raises agency costs and limits a bank's capacity to leverage its expertise fully. Furthermore, Stiroh and Rumble (2006) argue that diversification is misguided because they argue that the negative effects of "too big to fail" status and asymmetric information are caused by increased complexity, negative creation, and moral hazard. Lepetit et al. (2008a), DeYoung and Roland (2001), and Stiroh and Rumble (2006) show that banks with higher non-interest income are riskier, in which case risk is measured by many different metrics.

The social responsibility of a bank comprises supporting local community needs through a wide assortment of loan activities (Golec, 2018). However, both the Asian financial crisis and the 2008 banking crisis revealed heightened banking risks resulting from unsustainable loan expansion. This is not a new phenomenon, as Cocheo (1991) demonstrated that it is probably a weed if it grows fast. According to Kwan and Eisenbeis (1997), a low to moderate growth rate in bank lending is necessary for asset development and has long-term implications for bank survival. They also claim that high bank loan expansion is associated with poor loan quality

and bank collapse. This result was backed by Laeven (2002) and Foos et al. (2010). Dang (2019) investigates the influence of loan growth in Vietnam on risk using the Z-score regression model; the loan growth rate coefficients with a lag of 2 to 3 years demonstrate a positive effect on the loan growth rate. Meanwhile, variable loan growth with a one-year lag is not statistically significant in the context of past regression results indicating that loan growth diminishes banks. The author also demonstrates that while the greater the scale, the lesser the risk, GDP positively correlates with risk. Uddin et al. (2020) examined data from 730 banks in 19 emerging markets from 2011 to 2016 and discovered that enhancing government effectiveness, lowering corruption, raising agent confidence and adhering to the rule of law reduce bank risks and promote bank stability. In addition to validating the Z-score model, endurance testing in  $\sigma$  (NIM) demonstrates the impact of regulatory quality on bank risk reduction.

Furthermore, Kamran et al. (2019) research on government effectiveness, both stability measures in the form of z-score are adversely and significantly influenced by weak control over corruption, regulatory quality, centralized markets, established financial markets and bad debt are growing. Government corruption and efficiency, capital adequacy ratio, market structure and financial market development are major drivers for Islamic banking enterprises, determining the Z measure of stability. Some articles, such as Barth et al. (2004) and Calem and Rob (1999), explore the influence of bank capital on risk management in banking rules, pointing out that it plays a significant role in a bank's risk in the presence of capital requirements.

Furthermore, Repullo and Suarez (2004) concluded that when banks have greater market power, risk-modifying interventions in bank portfolio selection are more likely to be effective (brand value). The Franchise value may deter excessive risk-taking behavior by the bank's management (Michalak & Uhde, 2012). According to Besanko and Thakor (1993), the regulator must find a fragile balance between competing goals (lower lending rates or banking safety). Due to inadequate governance, Williams (2013) claimed that, before the Asian financial crisis, there was a positive link between bank capital and risk in Indonesia. Delis and Staikouras (2011) discover that supervisory intensity decreases bank risk while also improving the influence of market regulations on decreasing banking risk. However, even when supplemented by regulatory actions, capital requirements are ineffective in reducing bank risk (Delis & Staikouras, 2011). Klomp and de Haan (2011) discover that the banking laws employed to limit bank risk are affected by the equity structure and size of the Bank, with the impacts being most obvious for high-risk institutions. Similarly, Laeven and Levine (2009) find that the impact of bank regulations on risk also depends on ownership structure. The Bank of England will argue that the quality of national supervision will affect bank risk and that the risk reduction of capital regulations and brand equity will offset the negative impact of the "too big to fail" state as measured by the size of the Bank. Laeven and Levine (2009) show contradictory rules concerning quality. The implications of the varied economic situations across nations on bank risk have been infrequently examined.

Besides, some studies, such as Bikker and Metzemaekers (2005), find that the provision for bank loan losses is lower when the GDP growth rate is higher. Dietrich & Wanzenried (2011) and Athanasoglou (2008) demonstrate how macroeconomic conditions impact bank profitability. Dietrich and Wanzenried (2011) discover that Swiss bank profitability is cyclical and that the yield curve's slope influences Swiss bank profitability as well. Simultaneously, Athanasoglou et al. (2008) highlight the importance of the business cycle for Greek banks while also recognizing the impact of inflation. According to authors such as Buch and DeLong (2004), Berger et al. (2004), Cole et al. (2008) and Sturm and Williams (2010), countries with higher GDP per capita tend to have a more developed financial system, where national banks must be able to manage various aspects of risk associated with the provision of financial services. According to Lee and Hsieh (2013), banks in nations with rapid GDP growth are less hazardous. As a result, this research will consider the impact of national macroeconomic conditions on the Bank's risk.

### ***Hypothesis development***

From the arguments of the above studies, the research proposes some hypotheses as follows:

Hypothesis 1: There is a negative relationship between bank risk and bank capital.

Hypothesis 2: Banks with higher franchise values will have a lower risk.

Hypothesis 3: There is a positive relationship between bank risk and bank size with the "too big to fail" state.

Hypothesis 4: Banks with higher levels of non-interest income are riskier.

Hypothesis 5: Loan growth has a positive relationship with bank risk.

Hypothesis 6: Higher national regulatory quality minimizes bank risk.

Hypothesis 7: National regulatory quality increases the risk-reducing effects of capital holding and franchise value.

Hypothesis 8: National regulatory quality decreases the possibility of seeking incentives as a result of being too big to fail.

### **Research Methodology**

#### ***Data of model***

The study uses data from the published annual financial statements of 20 commercial banks listed on the Ho Chi Minh Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) in Vietnam, with 200 observations from 2010 to 2020. In addition, Vietnamese macroeconomic data is taken from the World Bank (W.B).

#### ***Dependent Variable***

Z-score is usually measured for solvency which assesses the bankruptcy risk of banks (Boyd et al., 1993; Hudáková & Dvorský, 2018; Ahmad et al., 2109; Zvarikova et al., 2017, Rozsa et al., 2021). Z-score represents a decrease in earnings that will cause a capital deficit, causing the Bank to fall into bankruptcy and face bankruptcy risk.

$$Z\text{-score} = \frac{\overline{ROAA} + \bar{K}}{\delta(\overline{ROAA})}$$

In which,  $K = -(\text{Equity}/\text{Total assets})$ ,  $\delta(\overline{ROAA})$  is the standard deviation of ROAA. This paper uses a two-year to generate estimates of bank risk (Barry (2014)). With ROAA, this study uses the approach of Alizadeh (2002) to apply Log (high value - low value). ROAA is always assumed to be smaller than the absolute value of k.

#### **Independent Variables**

*Equity on total assets (ETA):* Equity is one of the factors affecting the Bank's risk. This study will use the Bank's Equity as a percentage of total assets to test whether the increase or decrease in the capital significantly impacts the Bank's risk.

The Equity on total assets (ETA) defined as

$$\text{Equity on total assets (ETA)} = \frac{\text{Equity}}{\text{Total assets}}$$

*Bank size:* Assets represent the size of the Bank; the more significant the Bank's assets, the larger its size will be. According to previous studies such as Foos et al. (2010), bank size is calculated using the natural logarithm of the Bank's total assets. The bank size (LTA) defined as

$$\text{Bank Size (LTA)} = \text{Log (total assets)}$$

*Franchise Value:* Some banks increase their liabilities by raising capital through the domestic deposit market, the domestic capital market (both debt and equity), or the international capital market. This study argues that banks with high domestic deposits that do not need to raise capital in the capital market have higher brand value due to the infrastructure necessary to raise money and a reputable source of wealth. The author calculates Franchise value by a bank's investment (the fixed assets it uses to carry out banking activities) divided by total assets (Barry, 2014).

The Franchise Value (F.V.) defined as

$$\text{Franchise Value (F.V.)} = \frac{\text{Fixed assets}}{\text{Total assets}}$$

*Noninterest Revenue:* As discussed above, the increased Bank income based heavily on service operations indicates a structural change in bank risk. To measure this effect, the full service operating income on total revenue will be used (using the 2-year mobile average value) (Allen and Santomero, 2001; Lepetit et al., 2008b.)

The Noninterest Revenue (N.R.) defined as

$$\text{Noninterest Revenue (F.V.)} = \frac{\text{Income from service activities}}{\text{Total revenue}}$$

*Loan growth:* A change in total loans measures loan growth over two years in accordance with the dependent variable used by Kwan (1997).

The Loan growth (LGR) defined as

$$\text{Loan growth (LGR)} = \frac{\text{Total outstanding loans year}_t}{\text{Total outstanding loans year}_{(t-1)}}$$

*Governance effectiveness and regulatory quality:* The World Governance Indicators of the W.B. provide six metrics of the different aspects of national management (Kaufmann et al., 2010). Since this paper focuses on the impact of banking risk regulations, the author will use two out of six measures (I) government efficiency and (II) executive quality. World Governance Indicators defines government effectiveness as "an awareness of the quality of public services, the quality of civil services and the degree of independence from political pressures, the quality of

construction and implementation of policies, and the reliability of government commitment to such policies." The quality of operations is defined as: "The perception of the government's ability to create and implement entire policy sutures and regulations that allow and promote private sector development". This study will use Indicators based on the metrics provided by the World Governance Indicators, which rank each country on a scale from zero to 100 for each of the selected measurements (Barry, 2014)

*Macroeconomic controls:* To adjust these macroeconomic differences, a measure of economic performance will be used. GDP growth will regulate the difference in the development of the financial system and the effects of the economic cycle (Cole et al., 2008; Sturm and Williams, 2010). In addition, as inflation also plays a role in determining bank returns (Athanasoglou et al., 2008), the country's changes in inflation will be incorporated into the model from zero to 100 for each of the selected measurements (Barry, 2014).

Thus, the model with a dependence variable (Z-score) and 11 independence variables, including Equity to total assets (ETA), Franchise value (F.V.), Bank size (B.S.), Loan growth (L.G.), Noninterest revenue (NIR), Governance effectiveness (G.E.), Regulatory quality (R.Q.), GDP growth (GDPG), inflation (INF), *Regulatory Quality \* Equity Total Assets* (RQE) and *Regulatory Quality \* Franchise Value* (RQF).

The model will be estimated using equation (1) below:

$$\text{Bank risk} = \alpha + \beta_1 * \text{ETA} + \beta_2 * \text{FV} + \beta_3 * \text{BS} + \beta_4 * \text{LG} + \beta_5 * \text{NIR} + \beta_6 * \text{GE} + \beta_7 * \text{RQ} + \beta_8 * \text{GDPG} + \beta_9 * \text{INF} + \beta_{10} * \text{RQE} + \beta_{11} * \text{RQF}$$

In which  $\beta_1$  is an intercept, and  $\beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10},$  and  $\beta_{11}$  are parameters associated with the corresponding independent variables included in the model.

### **Research Methods**

All variables will be estimated using the two-year average's mean values. First, the author will consider the multicollinearity of the model by the VIF test. This is performed to check whether a single variable, a certain explanation, is correlated with another explanatory variable. Accordingly, the paper uses the correlation coefficient between the variables to test. If treatment absolute values of variables are greater than 0.8 and statistically significant, the model is more likely for multicollinearity occurs. After that, the research uses the POLS model to consider an economic relationship between a dependent variable Y and two independent variables  $X_1, X_2,$  and a or more unobserved variables. The tabular data for Y,  $X_1,$  and  $X_2$  consists of N - arguments object and T - time so that it will have NxT observations. The Pooled OLS regression model has the form:

$$Y_{it} = \alpha_1 + \beta_1 X_{it1} + \beta_2 X_{it2} + \dots + \beta_k X_{itk} + u_{it} \quad \text{with } i = 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T$$

where  $Y_{it}$  is the value of Y for object i at time t;  $X_{it1}$  is the value of  $X_1$  for object i at time t;  $X_{it2}$  is the value of  $X_2$  for object i at time t, and  $u_{it}$  is the error of object i at time t. Each cross-unit is an unobservable factor that does not change over time, and it is specific to each cross-unit. If correlated with any variable  $X_t$  then divisors, the amount of regression from the regression Y on  $X_t$  will be cross-affected by the least

observable dissimilar factors if  $i$  is not correlated with any of the solutions. Thus, the author uses a more fixed-effects model (FEM) and a random-effects model (REM). However, selecting between three models is appropriate. The author performed the Hausman test and Breusch – Pagan Lagrangian test. After choosing the suitable model, the author will also test the model chosen for autocorrelation or variable variance. If yes, then the author will use the Generalized Least Squares (GLS) regression method to overcome.

## Research Results

### *Description of statistics*

The author follows Boyd et al. (1993) to calculate Z-score for 20 commercial banks in Vietnam from 2010 to 2020 based on the secondary data collected from banks' audited annual financial statements. Table 1 presents the descriptive statistics for all the major characteristics used in our main regression models.

**Table 1. Descriptive statistics of variables**

Variable	Obs	Mean	Std. Dev.	Min	Max
ZSCORE	200	2.09555	1.69483	-1.8386	6.95543
ETA	200	9.40801	4.28606	4.11023	27.5644
BS	200	8.05119	0.50626	6.76175	9.14659
FV	200	1.50355	1.34985	0.15252	6.04568
NIR	200	5.07245	3.39539	0.28232	16.5901
LG	200	0.24471	0.21431	-0.301	1.13304
GE	200	50.73	3.55009	46	55.3
RQ	200	33.17	4.38821	28	41.8
GDPG	200	5.24	0.60351	4.2	6
INF	200	6.08	4.99081	0.6	18.7
RQE	200	306.883	130.229	144.287	791.097
RQF	200	49.4326	130.229	5.3533	225.091

Source: Author's calculation.

The mean and standard deviation of Zscore is 2.09% and 6.95%, respectively. The minimum is approximately -1.83 (Vietcombank in 2019), and 6.955 is the maximum (TPbank in 2012). Average Equity to Total Assets averaged is 9.4%, with a standard deviation of 4.29%, the lowest value of 4.11% (BIDV 2018), and the highest value of 27.56% (Viet Capital Bank 2010). Bank size has an average value of 8.05% and a standard deviation of 0.5%, with a minimum value of 6.76% (in Vietnam Capital Bank 2010) and a maximum value of 9.15% (in BIDV 2019). The franchise value has a 1.5% average and 1.34% standard deviation, with the lowest value being 0.15% (T.P. Bank in 2016) and the highest value being 6.04% (SaiGonBank in 2011).



Noninterest Revenue has a median value of 5.07% and a standard deviation of 1.34%, with the smallest value being 0.28% (KienLongBank in 2014) and the largest being 16.5% (TechcomBank 2018). Loan growth has a mean value of 0.24% and a standard deviation of 0.21%, the lowest value is negative 0.3% (2011), and the highest value is 1.13% (2010). Governance effectiveness has mean and standard deviations of 50.73 and 3.55, respectively, the lowest being 46% and the highest value being 55.3%. Regulatory quality's mean and standard deviations are 33.17% and 4.38%, respectively, with a minimum value of 28% and a maximum of 51.8%. GDP growth has a mean value of 5.24% and a standard deviation of 0.6%, the lowest value is 4.2%, and the highest value is 6%.

#### **Correlation matrix**

To test the correlation between variables, the author performed the Pearson correlation coefficient test. Regression results show that the coefficients for independent variables in the above matrix are less than 80%, meaning that independent variables in the model have no high correlation. The possibility of a multilinear occurrence in the regression model is low.

#### **Regression results**

With the VIF test, multicollinearity has occurred for the model. However, according to Goldberger, "When a study has the problem of multicollinearity, it is necessary to see if this problem is still persuasive if the "small sample size problem" is substituted for the "multicollinearity problem." He suggests deciding how small the number of observations  $n$  is before deciding that they have a small sample size problem, as when they decide the value of  $R^2$  in an auxiliary regression function before saying that the problem of collinearity is serious. Therefore, the author continues to use these variables for the model. After performing regression, POLS, FEM, REM and Hausman test have been used to select the appropriate model. The author has selected the REM model as the most suitable model with  $\text{Prob} > \chi^2 = 0.9357$ . However, there appears the phenomenon of heteroscedasticity (Breusch and Pagan Lagrangian multiplier test have  $\text{Prob} > \chi^2 = 0.0000$ ) and autocorrelation ( $\text{Prob} > F = 0.0000$  from Wooldridge test) in the REM model. Thus, the author uses the GLS model to overcome heteroscedasticity and autocorrelation. The results are shown in Table 2.

**Table 2. Regression according to Fixed Effect Model (FEM)**

Variable	POLS	FEM	REM	GLS
<b>ETA</b>	-0.248	-0.496***	-0.462***	0.0442
	[-1.18]	[-3.67]	[-3.47]	[0.33]
<b>BS</b>	2.935***	1.310**	1.938***	1.815***
	[9.25]	[2.42]	[4.50]	[5.05]
<b>FV</b>	1.927***	2.439***	2.291***	0.827**
	[3.18]	[6.24]	[5.99]	[2.09]
<b>NIR</b>	0.0184	0.00133	0.0178	0.0879***

	[0.52]	[0.04]	[0.52]	[2.61]
<b>LG</b>	1.503***	1.482***	1.556***	0.883***
	[3.40]	[5.05]	[5.40]	[4.58]
<b>GE</b>	-0.175***	-0.185***	-0.183***	-0.151***
	[-2.86]	[-5.16]	[-5.14]	[-4.87]
<b>EQ</b>	-0.0516	-0.0117	-0.0402	0.0415
	[-0.80]	[-0.26]	[-0.95]	[1.16]
<b>GDPG</b>	0.816***	0.662***	0.708***	0.506***
	[2.94]	[3.83]	[4.16]	[4.07]
<b>INF</b>	0.0674**	0.0582***	0.0629***	0.0366***
	[2.31]	[3.36]	[3.67]	[3.53]
<b>RQE</b>	0.0125*	0.0186***	0.0178***	0.00249
	[1.88]	[4.41]	[4.27]	[0.61]
<b>RQF</b>	-0.0570***	-0.0767***	-0.0704***	-0.0257**
	[-3.09]	[-6.02]	[-5.78]	[-2.17]
<b>_Cons</b>	-17.64***	-3.824	-8.543**	-11.03***
	[-4.54]	[-0.86]	[-2.29]	[-3.34]
R-sq	0.561	0.614		
	Prob > F = 0.0000	Prob > F = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000
	F (11, 188) = 21.87	F (11,169) = 24.44	Wald chi2(11) = 283.24	Wald chi2(11) = 194.99

Note: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 2 indicates that eight independence variables have statistical significance, including Franchise value (F.V.), Bank size (B.S.), Loan growth (L.G.), Non-Interest revenue (NIR), Governance effectiveness (G.E.), GDP growth (GDPG), inflation (INF) and Regulatory Quality\*Franchise value (RQF). Meanwhile, Equity to total assets (ETA), Regulatory quality (R.Q.) and Regulatory Quality\*Equity Total Assets (RQE) are not enough basis for determining the influence on bank risk.

#### **Bank size**

From the debate on the issue of being too big to fail in developing and developed countries (Kaufman, 2014), an important relationship between bank size and bank risk has been shown. The support from the Too big to fail point of view partly increases bank risk. Research results show that size increase is associated with bank risk. An increase of 1 unit of LTA will increase the Bank's risk (Z-score) by 0.1815 units at a 1% significance level. Similar to the research results of Fu et al. (2014) when it is said that the smaller the scale, the less the risk would be.

#### **Franchise value**

The incremental franchise value is found to increase bank risk. Mainly, when the franchise value goes up 1 unit, it would result in significant growth in risk (0.827 units), which means that the franchise value greatly influences the Bank's operations. It is noteworthy that the regulatory quality regime improved and may partly reduce the risk of moral hazard to the Bank. Keeley (1990) asserted that increased monopoly rents lead to higher franchising value. From the results of franchise value with regulatory quality, the study finds a negative relationship with risk at a 5% significance level; specifically, when the franchise value under good quality control increases by 1 unit, the bank risk will reduce by 0.0257 units. Barry (2014) also supports this view.

#### ***Noninterest revenue***

Non-interest revenue positively affects bank risk. When this variable increases by 1 unit, it will increase bank risk by 0.0879 units. This suggests that the bank income diversification in pursuit of profit increases risk as it may be increasing with anomalous information, leading to increased moral hazard among the management of the Bank. The results are similar to the study of Elyasiani and Wang (2008), Lepetit et al. (2008a), and Stiroh and Rumble (2006). As mentioned in theory, non-interest income has a U-shaped relationship with risk. When banks diversify investment, it will increase income, and at a reasonable level, it will have a good effect on the activities of the Bank. However, when non-interest revenue is over-limited in the average industry, it increases risks (information asymmetry and moral hazard). The results coincide with the results of previous studies (Lepetit et al., 2008b; Barry, 2014).

#### ***Loan Growth***

Regression results show that credit growth of 1 unit will increase risk significantly (0.883 units) at a 1% significance level. This suggests that credit activities greatly impact the Bank's risk because it is the main activity that generates revenue. LG also has a U-shaped relationship with risk. If the Bank maintains a stable credit level, it will not affect the risk too much, but the risk will be high if it exceeds the industry average. Similar results were found by Barry (2014).

#### ***Governance effectiveness***

The results show a negative correlation between governance efficiency and bank risk, which means improving governance can reduce bank risk. Specifically, when the management is evaluated to increase by 1 unit, the impact will decrease by 0.151 units at a 1% significance level. This is also proven by research from Kaufman (2014) and Barry (2014).

#### ***Macroeconomic controls***

The GDP growth and inflation that participate in the model have a positive relationship with the dependent variable. A unit increase in GDP growth and inflation increases bank risk by 0.506 and 0.0366 units, respectively. The result is similar to that of Dang (2019). It is noteworthy that the impact of GDP growth is quite significant and that GDP growth will lead to an increase in bank risk, which is the opposite of the findings of Lee and Hsieh (2013) and Bikker and Metzmakers

(2005). From the economic perspective, the author can explain this difference: when an economy grows, it increases demand for production and consumption, which helps credit growth. Still, as shown in the section, credit growth is U-shaped, and excessive growth will increase the bank's risk. Similarly, when INF in the economy increases, the State Bank implements a tight monetary policy to combat inflation, the credit activities will also be affected. Specifically, the increase in lending interest rates will push up the input costs of enterprises, which reduces the business efficiency of borrowing enterprises, thereby directly affecting their ability to repay loans to banks. In addition, tightening lending by banks will lead to the illiquidity of the economy, stagnant production and business activities, businesses misappropriating capital from each other, and insolvency; many enterprises, especially small and medium-sized enterprises, face the risk of bankruptcy, pushing the burden of bad debt to banks. This also means increased risk for the Bank.

### **Conclusion**

The study analyzed data gathered from 20 joint-stock commercial banks in Vietnam between 2010 and 2020 to assess the influence of several factors on banking risk. According to the research findings, although there is insufficient evidence to establish the effect, based on the actual situations of the banks in Vietnam, equity would typically assist the Bank in avoiding bankruptcy risk debt by assuring the Bank's liquidity in its operations. According to Koehn and Santomero (1980) and Blum (1999), management prefers high-risk, high-return initiatives to generate adequate income to pay for high capital expenses. Furthermore, because of the state bank's assistance, banks are bound to be subjective and reliant. As a result of this study, big banks should be more cautious in making financial choices with large budgets. They should also have quality rules and regulations in place to assure revenue growth while maintaining an acceptable level of risk. Previous research has shown comparable results to those obtained by Fu et al. (2014). On the other hand, in Vietnam, the monopoly, the State Bank's intervention, and reduction of the capital contribution ratio in banks have been steadily diminished, which has helped the banks operate better. This study established that monopolies have a favorable impact on risk. The bigger the brand value, the more confident banks will be in selecting large projects and making risky judgments. In addition, loan growth must be carefully monitored because it is the main source of income for banks in Vietnam. It provides a significant source of money for the Bank and causes a rise in bad debt. Credit expansion has a positive with risk. As a result, the danger is low if growth is manageable with an appropriate supply. In addition, management policies must be considered carefully. If the management quality is good, a nation with a developed economy and a stable political climate will help the Bank decrease its risks. As a result, the negative correlation between bank risk and political influence remains ambiguous. Nowadays, it is customary for banks to seek profit from other operations. Nevertheless, these activities will raise the Bank's risks, particularly those with large capital, and impact the Bank's liquidity. At the same time, external factors such as

GDP growth will raise the risk, contradicting Lee and Hsieh's findings (2013). The author can explain that when the expanding economy leads to the expansion of the financial system (Cole et al., 2008; Sturm & Williams, 2010), banks will extend lending and investment with higher risk. As a result, banks must pay close attention if the economy develops too quickly, as this is likely to have an impact on their operations. Furthermore, rising inflation might make banking operations more volatile, increasing the danger of insolvency.

The study does, however, have certain drawbacks. Firstly, the estimated model does not properly depict the effect of variables on banking risk due to inconsistencies in the banking system's information sources. Secondly, several additional risk indicators were left out of the analysis, such as the bad debt ratio (NPL) and the capital contribution ratio of foreign investors. Thirdly, the author did not evaluate the complete number of operating banks in Vietnam, but just 20/37 banks. Fourthly, banks have not been separated into groups to examine the state bank's effect and how the rate of capital contribution from overseas would affect the Bank's risk. Finally, this research describes the total impacts of government without defining legislation as political or economic, short-term or long-term. According to the author, these might be fascinating research topics for the future.

## References

- Ahmad, I., Salam, S., Ahmad, A. and Abbas, S., (2019). The nexus between credit risk and liquidity risk and their impact on banks financial performance: Evidence from Pakistan. *Sarhad Journal of Management Sciences*, 5(1), 67-86.
- Allen, F., Santomero, A. M., (2001). What do financial intermediaries do?. *Journal of Banking & Finance*, 25(2), 271-294.
- Barth, J. R., Caprio Jr, G. and Levine, R., (2004). Bank regulation and supervision: what works best?. *Journal of Financial Intermediation*, 13(2), 205-248.
- Besanko, D., Thakor, A. V., (2004). *Relationship banking, deposit insurance and bank portfolio choice* (No. 0411046). University Library of Munich, Germany.
- Blum, J., (1999). Do capital adequacy requirements reduce risks in banking?. *Journal of Banking & Finance*, 23(5), 755-771.
- Boyd, J. H., Graham, S. L. and Hewitt, R. S., (1993). Bank holding company mergers with nonbank financial firms: Effects on the risk of failure. *Journal of banking & finance*, 17(1), 43-63.
- Buch, C. M., DeLong, G., (2004). Cross-border bank mergers: What lures the rare animal?. *Journal of Banking & Finance*, 28(9), 2077-2102.
- Calem, P., Rob, R., (1999). The impact of capital-based regulation on bank risk-taking. *Journal of Financial Intermediation*, 8(4), 317-352.
- Cole, R. A., Moshirian, F. and Wu, Q., (2008). Bank stock returns and economic growth. *Journal of Banking & Finance*, 32(6), 995-1007.
- Craine, R., (1995). Fairly priced deposit insurance and bank charter policy. *The Journal of Finance*, 50(5), 1735-1746.
- Delis, M. D., Staikouras, P. K., (2011). Supervisory effectiveness and bank risk. *Review of*

- Finance*, 15(3), 511-543.
- Diamond, D. W., (1984). Financial intermediation and delegated monitoring. *The review of economic studies*, 51(3), 393-414.
- Elyasiani, E., Wang, Y., (2008). Non-interest income diversification and information asymmetry of Bank holding companies. *Unpublished manuscript, FMA: [http://www.fma.org/Texas/Papers/BHC\\_Diversification\\_Asymmetric.pdf](http://www.fma.org/Texas/Papers/BHC_Diversification_Asymmetric.pdf)*.
- Foos, D., Norden, L. and Weber, M., (2010). Loan growth and riskiness of banks. *Journal of Banking & Finance*, 34(12), 2929-2940.
- Fu, X. M., Lin, Y. R. and Molyneux, P., (2014). Bank competition and financial stability in Asia Pacific. *Journal of Banking & Finance*, 38, 64-77.
- Golec, M. M., (2018). Cooperative banks' social responsibility: The lending activities of a group of cooperative banks in Poland. In *Forum Scientiae Oeconomia* (Vol. 6, No. 3, pp. 41-53). Wydawnictwo Naukowe Akademii WSB.
- Hudáková, M., Dvorský, J., (2018). Assessing the risks and their sources in dependence on the rate of implementing the risk management process in the SMEs. *Equilibrium-quarterly Journal of economics and economic policy*.
- Imbierowicz, B., Rauch, C., (2014). The relationship between liquidity risk and credit risk in banks. *Journal of Banking & Finance*, 40, 242-256.
- Kaufman, G. G., (2014). Too big to fail in banking: What does it mean?. *Journal of Financial Stability*, 13, 214-223.
- Kaufmann, D., Kraay, A. and Mastruzzi, M., (2010). *The worldwide governance indicators: A summary of methodology, data and analytical issues. World Bank Policy Research* (No. 5430). working paper.
- Keeley, M. C., (1990). Deposit insurance, risk, and market power in banking. *The American economic review*, 1183-1200.
- Klomp, J., De Haan, J., (2012). Banking risk and regulation: Does one size fit all?. *Journal of Banking & Finance*, 36(12), 3197-3212.
- Kocisova, K., Gavurova, B. and Behun, M., (2018). The evaluation of stability of Czech and Slovak banks. *Oeconomia Copernicana*, 9(2), 205-223.
- Kwan, S., Eisenbeis, R. A., (1997). Bank risk, capitalization, and operating efficiency. *Journal of financial services research*, 12(2), 117-131.
- Laeven, L., (2002). Bank risk and deposit insurance. *The world bank economic review*, 16(1), 109-137.
- Lee, C. C., Hsieh, M. F., (2013). The impact of bank capital on profitability and risk in Asian banking. *Journal of international money and finance*, 32, 251-281.
- Lepetit, L., Nys, E., Rous, P. and Tarazi, A., (2008). Bank income structure and risk: An empirical analysis of European banks. *Journal of banking & finance*, 32(8), 1452-1467.
- Marcus, A. J., (1984). Deregulation and bank financial policy. *Journal of banking & finance*, 8(4), 557-565.
- Rozsa, Z., Khan, K. A. and Zvarikova, K., (2021). Corporate social responsibility and essential factors of personnel risk management in SMEs. *Polish Journal of Management Studies*, 23(2), 449.
- Stiroh, K. J., (2004). Do community banks benefit from diversification?. *Journal of Financial Services Research*, 25(2), 135-160.
- Sturm, J. E., Williams, B., (2010). What determines differences in foreign bank efficiency? Australian evidence. *Journal of International Financial Markets, Institutions and Money*, 20(3), 284-309.

Zvarikova, K., Spuchlakova, E. and Sopkova, G., (2017). International comparison of the relevant variables in the chosen bankruptcy models used in the risk management. *Oeconomia Copernicana*, 8(1), 145-157.

## RYZYSKO BANKOWE I ZARZĄDZANIE KRAJEM

**Streszczenie:** Niniejsze badanie ma na celu zbadanie ryzyka bankowego rozpatrywanego w Wietnamie z perspektywy przyczyn wewnętrznych i skutków rządowych w bieżącym okresie. Rozszerza również aktualne poglądy na problemy związane z ryzykiem bankowym, badając wpływ przepisów krajowych na modelowanie ryzyka bankowego, co zainteresowało kilku badaczy w Wietnamie. Badanie wykorzystuje wielowymiarowy model regresji na zbiorze danych 20 banków komercyjnych w Wietnamie w latach 2010-2020. Z-score reprezentujący ryzyko Banku, wyniki badania pokazują, że wpływ rządu, jakość regulacyjna i wartość franczyzy znacznie zmniejszają ryzyko. Inne czynniki ryzyka dla banków obejmują dochody pozaodsetkowe, wzrost kredytów, jakość regulacyjną i inne czynniki makro. Co więcej, autor odkrył pozytywny związek między wielkością banku a wynikiem Z, co oznacza wyrażenie „zbyt duży, by upaść” na rynku wietnamskim. W związku z tym autor przedstawia kilka rekomendacji związanych z działaniami na rzecz poprawy zarządzania systemem bankowym.

**Słowa kluczowe:** Ryzyko bankowe, zarządzanie krajem, Z-score, ryzyko bankowe, Wietnamski Bank

## 银行风险与国家治理

**摘要:** 本研究旨在从当前时期内因和政府影响的角度考察越南考虑的银行业风险。它还通过调查国家特定法规对银行风险建模的影响，扩展了当前对银行风险问题的看法。越南的一些研究人员对此很感兴趣。该研究对 2010 年至 2020 年间越南 20 家商业银行的数据集使用多元回归模型。Z 分数代表银行的风险，研究结果表明，政府影响力、监管质量和特许经营价值显著降低了风险。银行的其他风险考虑因素包括非利息收入、贷款增长、监管质量和其他宏观因素。此外，作者发现银行规模与 Z 分数之间存在正相关关系，这代表了越南市场“太大而不能倒”的说法。因此，笔者提出了一些有关改善银行体系治理的措施的建议。

**关键词:** 银行风险，国家治理，Z-score，银行风险，越南银行