

State-ownership and bank risk: A case of Vietnamese commercial banks

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ABSTRACT

The paper aims to verify the impact of state-ownership on banks' risks at Vietnamese commercial banks. Based on the survey data of 31 commercial banks in Vietnam from 2007 to 2018, the empirical result shows that the state-ownership in the Vietnamese commercial banks has a decrease in the banks' risks. Besides, the research result is shown that the lower Vietnamese commercial banks' risks at the previous time lead to the lower ones at present. Furthermore, this evidence contributes to the debate of state-ownership for the Vietnamese commercial banks which gives policy-makers to pay more attention to the efficiency of joint-stock state-ownership.

1. Introduction

Has the state-ownership increased in banks' risks? This has been the main subject of academic research on the controversy.

It is known in some previous researches that the ownership of state-banks has an increase in the risk-level of banks (Cornett, Guo, Khaksari, & Tehranian, 2010; Iannotta, Nocera, & Sironi, 2013; Xiao & Zhao, 2012; Zhu & Yang, 2016). The empirical result of Iannotta et al. (2013) was found that risks of state-owners arisen from banks' operating are higher than bank private-owners' ones, particularly the bank-operating risks are increased due to electoral cycles and political consistency to protect the government. This protection has arisen from a moral hazard, and the government itself also damages the guarantees of bank state-owners who lose their ability to pay. Xiao and Zhao (2012) support the low ratio of bank state-ownership. Besides, credit risk in state-owned banks is higher than private banks (Cornett et al., 2010) ... the research of Zhu and Yang (2016) also has a conclusion similar to the research of Cornett et al. (2010) that commercial banks are controlled with high credit risk by the government.

On the other hand, some previous researches were also found empirical pieces of evidence that bank-state ownership makes a decrease in banks' risks (Bertay, Demirgüç-kunt, & Huizinga, 2015; Iannotta et al., 2013; La Porta, Lopez-de-Silanes, & Shleifer, 2002; Micco & Panizza, 2006). Specifically, the empirical findings of default risk for bank state-owners have been lower than bank private-owners' ones, leading to the result that bank state-owners have been less responsive to macro shocks (Micco & Panizza, 2006). Furthermore, bank state-ownership plays an important role in stabilizing credits for bank-operating cycles as well as the period of financial instability (Bertay et al., 2015). The research of La Porta et al. (2002) stands the point view of bank state-ownership with

a large proportion in the countries whose government had strong interventions for inefficient financial systems to protect weak state-ownership in the banking system.

In Vietnam, the government has been conducting the divestment of capital gradually at BIDV, Vietinbank, and Vietcombank.

Therefore, the goal of this research paper is to consider the impact of bank state-ownership on bank risk and the empirical result is found that bank-state ownership decreases in banks' risks.

This paper contributes to the debate on academic research in the banking industry. The finding for this impact consolidates empirical evidence of commercial banks in Vietnam, a developing country. The result also helps the conjectural policy-making to divest capital at state-owned banks.

The structure of this paper is presented in the next parts: The second part is shown theoretical and hypothetical development, then the third part is given the methodology and data of research. The fourth part is found out research results, and the fifth part is a consistent test and the last section is given some conclusions.

2. Theory and research hypotheses

Clarke, Cull, and Shirley (2005) showed the review of privatization and bank's performance when the government completely abandoned the role of control and the privatization of state-owned banks to exchange to strategic investors and to support foreign banks allowed to participate in the private-ownership, as well as the efficiency of banks will increase if the government does not restrict banks' competition. The main problem is due to the strong intervention of government with the high ratio of state-ownership to decrease profits of state-owned banks (García-Herrero, Gavilá, & Santabábara, 2009), thus state-ownership in banks slows down the financial development process, particularly in developing countries (La Porta et al., 2002). These conclusions are consistent with Berger, Hasan, and Zhou (2009) that state-owned banks are the weakest efficiency. Besides, the proposals of Andrianova, Demetriades, and Shortland (2008) should encourage the development of private-owned banks in developed countries. Similarly, Iannotta et al. (2013) also pointed out that the government's protection creates a higher risk for bank state-owners.

Therefore, the H_1 theory is proposed that bank-state ownership makes an increase in banks' risks.

3. Research methodology and data

3.1. Research model

Following Bertay et al. (2015), the research model is proposed as:

$$\ln Zscore_{i,t} = \beta_0 + \beta_1 GOB_{i,t} + \sum_{k=2}^6 \beta_k X_{k,i,t-1} + \sum_{u=1}^2 \gamma_u M_{u,t-1} + \omega_l Year + \varepsilon_{i,t} \quad (1)$$

which $\ln Zscore_{i,t} = \ln \frac{EA_{i,t} + ROA_{i,t}}{\delta ROA_{i,t}}$ is the i^{th} bank's risk at time t . The higher increase in $\ln Zscore$ leads to the more stability of the commercial bank, and the lower bank risk (Hryckiewicz, 2014; Mohsni & Otchere, 2014), is affected by the research variable:

- $GOB_{i,t}$ is the state-owners' ratio of the commercial bank i at time t (Bertay et al., 2015; Cornett et al., 2010; La Porta et al., 2002).

And a set of control variables X_k to test the consistency of commercial banks' performance includes:

- $LnZscore_{i,t-1}$ is the logarithm *Zscore* of the bank i at time $t - 1$, to consider the change in *Zscore* overtime;

- $LnTA_{i,t-1}$ is the logarithm of total assets of bank i at time $t - 1$ (Agusman, Cullen, Gasbarro, Monroe, & Zumwalt, 2014; Mohsni & Otchere, 2014), to consider that commercial banks scale is used to make the control of the theory of economic scale and the problem is too large to collapse;

- $NPL_{i,t-1}$ is the ratio of non-performing loans and total loans of the bank i at time $t - 1$ (Dam & Koetter, 2012), to affect the credit risk of commercial banks positively on general bank risk;

- $ROE_{i,t-1}$ is a return on equity of bank i at time $t - 1$ (Dam & Koetter, 2012; Mohsni & Otchere, 2014), to point out the relationship between equity-profit and risk, so $ROE_{i,t-1}$ is used as a variable explanation for the impact of equity-profit negatively on bank risk;

- $LQU_{i,t-1}$ is the ratio of liquid assets and total assets of the bank i at time $t - 1$ (Dam & Koetter, 2012), to find out the effect of bank liquidity negatively on bank risk;

And a set of macroeconomic variables M_u to test the environment of the economy in Vietnam to respond to commercial banks' performance includes inflation rate INT_{t-1} , and economic growth $GDPGR_{t-1}$ at time $t - 1$ (Hryckiewicz, 2014).

3.2. Research data description

Research data is unbalanced table data from Bankscope, Orbis bank Focus, ADB, and annual reports of banks including 31 commercial Vietnamese banks in the period of 2007-2018. The main content of the data is presented in Table 1.

Table 1

Statistics describing variables

Variables	Definition	Observations	Mean	Standard deviation	Min	Max
$LnZscore$	$LnZscore = Ln \frac{(ROA + EA)}{\sigma ROA}$	309	2.32664	0.93409	-0.65406	5.15349
$LnTA$	Logarithm of Total Assets	311	11.31581	1.19557	8.56415	14.08785
NPL	Ratio of Non-Performing Loans and Total Loans	287	0.02323	0.01855	0	0.14509
ROE	Return on Equity	311	0.09203	0.08436	-0.82002	0.42486
LQU	Ratio of Liquid Assets and Total Assets	311	0.20741	0.11329	0.00018	0.57681
INF	Inflation Rate	311	0.08241	0.06335	0.0063	0.2297
$GDPGR$	Economic Growth	311	0.06141	0.00620	0.05247	0.07129
GOB	State-Owners' Proportion in commercial bank	311	0.13584	0.32629	0	1

Source: The researcher's data analysis

The statistical description in Table 1 is shown that the mean of *LnZscore* is 2.32664 with the maximum 5.15349 and the minimum -0.65406, and the mean of *GOB* is 0.13584 in the banking system with the maximum 1 of Agribank state-owner and the minimum 0 of private-owners.

The result of the correlation matrix is presented in Table 2, using a tool of Spearson correlation to test pair variables and the result is used to test “sign” expectation of research variables’ betas analyzed in the proposed research model: the pair variables of *LnZscore* and lag of *LnZscore* has the correlative coefficient 0.4954 at 0.01 significant meaning, but the pair variables of *LnZscore* and *GOB* do not correlate at 0.1 significant meaning.

Table 2

Correlation Matrix

Variables	<i>LnZscore</i>	<i>LnZscore_{t-1}</i>	<i>LnTA_{t-1}</i>	<i>NPL_{t-1}</i>	<i>ROE_{t-1}</i>	<i>LQU_{t-1}</i>	<i>GOB</i>	<i>INF_{t-1}</i>
<i>LnZscore_t</i>	0.4954***	1						
<i>LnTA_{t-1}</i>	0.0436	0.0389	1					
<i>NPL_{t-1}</i>	-0.0894	-0.1532**	0.1737***	1				
<i>ROE_{t-1}</i>	0.1031*	0.0715	0.2657***	-0.0049	1			
<i>LQU_{t-1}</i>	-0.0014	-0.0079	-0.2862***	-0.2032***	0.2001***	1		
<i>GOB</i>	0.0656	0.0462	0.6443***	-0.2032***	0.2104***	-0.1701***	1	
<i>INF_{t-1}</i>	-0.1979***	-0.1123*	-0.2857***	-0.0633	0.0945	0.3447***	0.0075	1
<i>GDPGR_{t-1}</i>	-0.1979**	0.2227***	0.1185**	-0.0661	0.0978	-0.0764	0.0267	-0.2482***

Note: *** significance level 1%, ** significance level 5%, * significance level 10%

Source: The researcher’s data analysis

4. Research findings

This section presents the impact of state-ownership on bank risk. The hypothesis H_1 test for the relationship of state-ownership and risk in equation 1 is shown in Table 3.

The P-value of Hansen J inspections all five columns is greater than 5%, concluding the right tool for variables. And the Arellano-Bond test results in a non-self-correlation of Tier 2 at a meaningful level of 5% but correlated with Tier 1 at a meaningful level of 1%. The *GOB* variable of five columns is all affected positive sign (+) at statistically significant meanings at 1% and 5%. The result of multiple regressions is suitable for sign expectation of pair research variables by correlation T-Test in Table 2. It is shown that the element of bank-state ownership *GOB* leads to a decrease in banks’ risks, then the research hypothesis H_1 is rejected for the element of bank-state ownership increasing in banks’ risks. Therefore, this result is supported by previous researches of same point (Bertay et al., 2015; Iannotta et al., 2013; La Porta et al., 2002; Micco & Panizza, 2006), but there are still some previous researches of opposite point (Andrianova et al., 2008; Berger, Hasan, Zhou, & Finance, 2009; Clarke et al., 2005; Cornett et al., 2010; García-Herrero et al., 2009; Iannotta et al., 2013; La Porta et al., 2002; Xiao & Zhao, 2012; Zhu & Yang, 2016). The main problem has arisen that Vietnam is a developing country, and the banking industry has been intervened strongly by the Government, so the role of bank-owned banks has been confirmed for controlling banks’ risks.

Moreover, this paper is assumed to lag of banks' risk, but the coefficient result of *LnZscore* lag from column (1) to (5) in Table 3 is also shown that the phenomenon of *LnZscore* accumulation over time has decreased in banks' risks, suitable for the positive sign expectation of pair research variables at 0.01 significant meaning in Table 2. The correlation between *LnZscore* and *LnZscore* lag is meaningful for decreasing in banks' risks.

Table 3

Results regression of bank risk (*LnZscore*) by the GMM system

Variables	(1) <i>LnZscore</i>	(2) <i>LnZscore</i>	(3) <i>LnZscore</i>	(4) <i>LnZscore</i>	(5) <i>LnZscore</i>
<i>LnZscore</i> _{<i>t</i>-1}	0.65827*** [0.10566]	0.70159*** [0.07936]	0.64791*** [0.10819]	0.57823*** [0.09911]	0.67343*** [0.10769]
<i>LnTA</i> _{<i>t</i>-1}	-0.05577 [0.07072]		-0.07873 [0.07324]	-0.13235** [0.05773]	-0.02825 [0.07094]
<i>NPL</i> _{<i>t</i>-1}	-1.33144 [2.12217]	-1.17246 [2.43561]		-1.08004 [1.83839]	0.09211 [2.19826]
<i>ROE</i> _{<i>t</i>-1}	-1.58610 [1.21279]	-2.13963** [0.94678]	-1.37570 [1.16832]		-1.76193 [1.26051]
<i>LQU</i> _{<i>t</i>-1}	0.66696 [0.46912]	0.52562 [0.45032]	0.29204 [0.45038]	0.76965 [0.53362]	
<i>GOB</i>	0.59574** [0.25283]	0.48313** [0.22120]	0.56579** [0.23416]	0.70137*** [0.25442]	0.48538** [0.23959]
Constant	1.90203** [0.85349]	1.26202*** [0.30731]	2.26676** [0.88071]	2.72509*** [0.84120]	0
Observations	255	255	255	255	255
AR1	-3.72 (0.000)	-3.98 (0.000)	-3.93 (0.000)	-3.57 (0.000)	-3.78 (0.000)
AR2	-1.80 (0.071)	-1.78 (0.075)	-1.54 (0.123)	-1.58 (0.065)	-1.80 (0.072)
Hansen J	7.22 (0.301)	7.95 (0.337)	9.7 (0.206)	9.58 (0.214)	9.68 (0.207)

The Dependent variable is $LnZscore = Ln \frac{(ROA+EA)}{\sigma ROA}$, where *ROA* is a return on total assets, *EA* is equity-total assets ratio, and σROA is the standard deviation of *ROA*.

The Independent Variables are *LnZscore*_{*t*-1} is logarithm *LnZscore* at time *t* - 1; *LnTA*_{*t*-1} is a scale of a total asset at time *t* - 1; *NPL*_{*t*-1} is a ratio of non-performing loans and total loans at time *t* - 1; *ROE*_{*t*-1} is a return on equity at time *t* - 1; *LQU*_{*t*-1} is a ratio of liquidity assets and total assets at time *t* - 1; *GOB* is state-owners' proportion in the commercial bank. All regression from column (1) to column (5) use the method of GMM system with two steps to estimate according to the adjustment of Windmeijer (2005).

*** Is the level of significance 1%; ** Is the level of significance 5%; * Is the level of significance 10%.

Source: Data analysis result of the research

5. Robustness test

To verify the stability, the estimation methods for table data such as Pool-OLS, FE, and RE are used. Check Hausman to select one of the three above methods. The results show that the regression coefficient of the *GOB* variable always carries a sign (+) and statistically significant at 1% and 5%. These methods strengthen the result that State ownership helps commercial banks less risk.

Table 4

Regression results of bank risk (*LnZscore*) by Pooled-OLS and RE

Variables	(1) <i>LnZscore</i>	(2) <i>LnZscore</i>	(3) <i>LnZscore</i>	(4) <i>LnZscore</i>	(5) <i>LnZscore</i>
<i>LnZscore</i> _{<i>t</i>-1}	0.46108*** [0.05827]	0.47450*** [0.05727]	0.47128*** [0.05553]	0.45733*** [0.05724]	0.46569*** [0.05799]
<i>LnTA</i> _{<i>t</i>-1}	-0.09669 [0.07949]		-0.09996 [0.07466]	-0.11144 [0.06817]	-0.09105 [0.07918]
<i>NPL</i> _{<i>t</i>-1}	-1.97496 [2.94873]	-1.64568 [2.93922]		-2.01615 [2.94118]	-2.18107 [2.93746]
<i>ROE</i> _{<i>t</i>-1}	-0.38629 [1.06587]	-1.04990 [0.91656]	-0.55505 [1.04169]		-0.40319 [1.06512]
<i>LQU</i> _{<i>t</i>-1}	0.47749 [0.55353]	0.42215 [0.55221]	0.63502 [0.51569]	0.48118 [0.55243]	
<i>GOB</i>	0.58818** [0.23301]	0.38776** [0.16490]	0.57358** [0.22350]	0.60359*** [0.22868]	0.54571** [0.22762]
<i>INF</i> _{<i>t</i>-1}	-5.31582 [9.17962]	-0.30143 [8.21002]	-1.96890 [8.81188]	-6.23737 [8.80437]	-3.14778 [8.82414]
<i>GDPGR</i> _{<i>t</i>-1}	-22.00778 [50.46113]	-28.21468 [50.25276]	-32.9713 [47.676]	-22.2745 [50.36399]	-23.41876 [50.40761]
Constant	3.94664 [3.16312]	3.07669 [3.08428]	4.50256 [2.95786]	4.14545 [3.10952]	3.96489 [3.16136]
Observations	255	255	274	255	255
R ²	0.3369***	0.3328***	0.3396***	0.3366***	0.3349***
Chosen Estimation	Pool-OLS	Pool-OLS	RE	Pool-OLS	Pool-OLS

The Dependent variable is $LnZscore = Ln \frac{(ROA+EA)}{\sigma ROA}$, where *ROA* is a return on total assets, *EA* is equity-total assets ratio, and σROA is the standard deviation of *ROA*.

The Independent variable is *LnZscore*_{*t*-1} is logarithm *LnZscore* at time *t* - 1; *LnTA*_{*t*-1} is a scale of the total asset at time *t* - 1; *NPL*_{*t*-1} is a ratio of non-performing loans and total loans at time *t* - 1; *ROE*_{*t*-1} is a return on equity at time *t* - 1; *LQU*_{*t*-1} is a ratio of liquidity assets and total assets at time *t* - 1; *GOB* is state-owners' proportion in the commercial bank; *INF*_{*t*-1} is inflation rate at time *t* - 1; *GDPGR*_{*t*-1} is economic growth at time *t* - 1. Among the Pooled-OLS, FE, RE in regression of robust-variable test, the chosen estimation in columns (1), (2), (3), (4) and (5) are the suitable results in panel data.

*** Is the level of significance 1%; ** Is the level of significance 5%; * Is the level of significance 10%.

Source: Data analysis result of the research

6. Conclusion

There are some previous researches which gave controversial outcomes when finding out the empirical evidence for the relationship between state-ownership and bank risks. Meanwhile, the Vietnamese Government has been divesting the source of capital at the commercial banks. Moreover, this study is a piece of empirical evidence to consolidate the research gap of state-ownership and bank risk. The research data involve 31 Vietnamese commercial banks in the period of 2007-2018; the results indicate that the increase in state ownership helps the decrease in bank risk. This further result shows that the state-ownership in the commercial banks in Vietnam has an important role to lower bank risk and at the same time, to supply policy makers more consistent bank efficiency under the process of state-owners' banks.

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