



# The Impact of Ownership Structure on Vietnamese Commercial Banks' Profitability

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## ABSTRACT

This study aims to check whether ownership structure affects Vietnamese commercial banks' profitability or not and identify factors influencing Vietnamese commercial banks' profitability as well. Utilizing the Bayesian Model Averaging (BMA) model applying for 21 commercial banks in the period 2010-2017, the authors found that bank ownership is statistically significant and the sign of the correlation coefficient is negative, indicating that state-owned commercial banks are less efficient than other commercial banks. Also, the empirical findings show that there are some factors affecting the profitability of commercial banks in Vietnam such as credit risk, capital adequacy ratio, cost-income ratio, staff expenses, and asset growth rate, where credit risk and cost-income ratio have a negative relation to banks' profitability.

**Keywords:** Bank Profitability, Bayesian Model Averaging, Commercial, Ownership Structure, Vietnam

**JEL Classifications:** G15, G21, G28

## 1. INTRODUCTION

Financial intermediaries play a very important role in most economies through a variety of activities such as providing payment instruments, bridging for customers, as well as promoting transparency in the market, and managing risk. Based on their functions, commercial banks are often seen as one of the most influential institutions in an economy. Similar to other financial intermediaries, the ultimate goal of commercial banks is for profitability, as it is a prerequisite for any enterprises to survive, help withstands the economic shocks as well as the financial crisis. Determining factors affecting commercial banks' profitability, therefore, has become a matter of concern and implementation by researchers around the world (Short, 1979; Bourke, 1989; Molyneux and Thornton, 1992). These studies indicating that there are a plenty of factors affecting bank's profitability, of which the remarkable variable is ownership structure, which is found with the conflict findings between previous studies. Specifically, Molyneux and Thornton (1992) concluded that there is a statistically significant positive relationship between bank

profitability and government ownership. Meanwhile, previously, Short (1979), and Bourke (1989) suggested that state-owned banks generate less profit than their competitors.

The Vietnamese commercial banking system with the total assets as of the end of 2018 reached VND 10,555 trillion, up 10.49% compared to the previous year, and the total profit after tax reached nearly VND 100,000 billion, up about 25,31% compared to the previous year (State Bank of Vietnam, 2018). Although there are more competitive advantages than other commercial banks due to the availability of cheaper funding thanks to the reputation of the state, the profitability of state-owned commercial banks is still at a low level in the rankings. Previously, the leading banks in terms of profitability usually belonged to state-owned commercial banks such as VCB, CTG, and BID. However, there was a change in this ranking in 2018, the profitability of BID, CTG almost caught up by joint-stock commercial banks such as TCB, VPBank, and MBB. It is worth mentioning that Agribank, a 100% state-owned commercial bank, had a lower profitability rate than other competitors. The question here is whether ownership structure

affects Vietnamese commercial banks' profitability or not, and in addition to the ownership structure, are there any other factors affecting Vietnamese commercial banks' profitability as well.

To our knowledge, there are some studies on factors affecting of Vietnamese commercial banks' profitability. However, there have been no studies on the impact of ownership structure on Vietnamese commercial banks' profitability. Derived from these problems, the authors carry out a study on the topic "The impact of ownership structure on Vietnamese commercial banks' profitability" in the period of 2010-2017 to have empirical support.

The rest of the paper is structured as follows. Section 2 provides a literature review on the determinants of bank profitability. Section 3 describes research and methodology. Section 4 shows empirical results and discussions. Finally, section 5 offers some conclusions.

## 2. LITERATURE REVIEW

Molyneux and Thornton (1992) studied factors affecting European bank profitability in the period of 1986-1989. They found that concentration, government ownership, and nominal interest rates affect banks' profitability positively. However, Short (1979), and Bourke (1989) concluded that state-owned commercial banks create lower profitability than their competitors. Kosmidou and Pasiouras (2007) studied determinants of the commercial banks' profitability in the European Union between 1995 and 2001 and concluded that capital adequacy ratio, inflation rate, GDP, C5 concentration, and liquidity ratio affect banks' profitability positively. In contrast, they found that the cost-income ratio and bank size affect banks' profitability negatively.

Athanasoglou et al. (2008) studied the determinants of profitability in the Greek banking industry covers the period 1985-2001 and concluded that capital adequacy ratio, productivity growth, business cycle, and inflation affect profitability positively, whereas, credit risk and operating expenses affect banks' profitability negatively.

In light of Athanasoglou et al. (2008) contributions, Dietrich and Wanzenried (2011) found that the banks' profitability and lagged banks' profitability and business cycle in Switzerland have a positive relationship, whereas, cost-income ratio, interest income, taxation affect banks' profitability negatively when considering all years. Furthermore, they suggested that bank ownership, CAR, and loan loss provisions affect banks' profitability positively, whereas, the yearly growth of deposits and bank size affect banks' profitability negatively. Also, they found evidence that the market structure affects banks' profitability positively, whereas, the funding costs affect banks' profitability negatively before the crisis.

In addition, Djalilov and Piesse (2016) analyzed determinants of bank profitability in transition countries in the period 2000-2013, emphasized that credit risk, government spending, monetary freedom, as well as squared terms of government spending and monetary freedom affect banks' profitability negatively. Moreover, they also found a piece of evidence shows that the capital adequacy ratio affect banks' profitability positively in early transition countries.

## 3. RESEARCH AND METHODOLOGY

### 3.1. Data Sources

To estimate the impact of ownership structure on Vietnamese commercial banks' profitability, a panel data of 21 commercial banks with 168 observations covering the period 2010-2017 is employed<sup>1</sup>.

### 3.2. Empirical Models

#### 3.2.1. Dependent variable

The dependent variable is the ratio of net profit after tax to average assets, denoted by ROA. The ROA of Vietnamese commercial banks over the 2010-2017 period shown in Table 1.

#### 3.2.2. Independent variables

Bank ownership, denoted by GOVT. It is a dummy variable, which is assigned value equals to 1 if a bank is the state-owned commercial bank (nationalized bank), equals to 0 if otherwise (private bank). According to the previous studies, only Molyneux and Thornton (1992) found evidence that the nationalized banks are more efficient than private banks, whereas, most authors found the opposite results (Short, 1979; Bourke, 1989; Marriott and Molyneux, 1991; Barth et al., 2004; Innotta et al., 2007; and Dietrich and Wanzenried, 2011), suggesting that the nationalized banks are less efficient than private banks.

In addition to bank ownership (GOVT), the authors also employ some control variables related to bank characteristics to determine whether these variables affect Vietnamese commercial banks' profitability or not. These bank characteristics variables include credit risk (CRED), bank size (SIZE), capital adequacy ratio (CAR), liquidity ratio (LDR), staff expenses (SE), deposit growth rate (DGR), asset growth rate (AGR), and cost-income ratio (CIR).

CRED is estimated by non-performing loans ratio, where the non-performing loans is the sum of non-accrual loans and all loans that are past due for ninety days or more (Stiroh and Metli, 2003, Lu and Whidbee, 2013, Ghosh, 2015, and Tarchouna et al., 2017). According to Athanasoglou et al. (2008), credit risk reduces banks' returns, opposite to the study findings of Djalilov and Piesse (2016) on the early reforming countries' findings.

SIZE, represents the bank size, estimated by using the logarithm of total assets (Chaibi and Ftiti, 2015). According to the previous

<sup>1</sup> Vietnam Bank for Agriculture and Rural Development (Agribank), Joint Stock Commercial Bank for Investment and Development of Vietnam (BID), Vietnam Joint Stock Commercial Bank for Industry and Trade (CTG), Bank for Foreign Trade of Vietnam (VCB), Joint-stock commercial banks: An Binh Commercial Joint Stock Bank (ABBank), Asia Commercial Bank (ACB), Vietnam Export Import Commercial Joint Stock Bank (EIB), Housing Development Commercial Joint Stock Bank (HDB), Kien Long Commercial Joint Stock Bank (KLB), Lien Viet Post Joint Stock Commercial Bank (LPB), Military Commercial Joint Stock Bank (MBB), Nam A Commercial Joint Stock Bank (NamABank), National Citizen Commercial Joint Stock Bank (NCB), Petrolimex Group Commercial Joint Stock Bank (PGBank), Sai Gon Joint Stock Commercial Bank (SCB), Saigon Bank for Industry and Trade (SGB), Saigon Hanoi Commercial Joint Stock Bank (SHB), Sai Gon Thuong Tin Commercial Joint Stock Bank (STB), Vietnam Technological and Commercial Joint Stock Bank (TCB), Vietnam International Commercial Joint Stock Bank (VIB), and Vietnam Prosperity Joint Stock Commercial Bank (VPB).

**Table 1: The ratio of net profit after tax to average assets (ROA)**

Bank	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)
Agribank	0.36	0.32	0.29	0.24	0.26	0.42	0.42	0.26
BID	0.63	0.67	0.85	0.83	0.78	0.58	0.13	0.89
CTG	0.73	0.79	0.79	0.93	1.08	1.28	1.51	1.12
VCB	1.00	0.94	0.85	0.88	0.99	1.13	1.25	1.50
ABBank	0.62	0.35	0.14	0.19	0.27	0.91	0.77	1.54
ACB	0.82	0.61	0.54	0.55	0.48	0.34	1.32	1.25
EIB	0.59	0.24	0.03	0.03	0.39	1.21	1.93	1.85
HDB	1.15	0.71	0.61	0.51	0.31	0.67	1.07	1.01
KLB	0.60	0.43	0.68	0.79	1.57	1.93	2.59	1.95
LPB	0.57	0.90	0.85	0.34	0.52	0.78	1.42	2.14
MBB	1.22	1.21	1.19	1.31	1.28	1.48	1.54	1.95
NamABank	0.49	0.08	0.53	0.57	0.60	1.03	1.43	1.09
NCB	0.03	0.02	0.02	0.02	0.07	0.01	0.78	0.81
PGBank	0.24	0.50	0.16	0.52	0.17	1.30	2.63	1.63
SCB	0.03	0.02	0.03	0.04	0.03	0.06	0.58	0.49
SGB	0.27	0.76	0.26	1.19	1.17	1.97	1.89	5.57
SHB	0.59	0.42	0.43	0.51	0.65	0.03	1.23	1.26
STB	0.34	0.03	0.27	1.26	1.42	0.68	1.36	1.49
TCB	2.55	1.47	0.83	0.65	0.39	0.42	1.91	1.71
VIB	0.99	0.59	0.63	0.66	0.07	0.64	0.67	1.05
VPB	2.54	1.86	1.34	0.88	0.91	0.69	1.12	1.15

Source: Financial statement of commercial banks (2010-2017)

studies, the authors concluded that bank size effect on banks' profitability negatively (Kosmidou and Pasiouras, 2007; Dietrich and Wanzenried, 2011), meaning that the bank has a large size is less profitable than the bank has a small size. Also, the authors took the square of size as an independent variable to allow for non-linear effects.

CAR, represents the capital adequacy ratio. This ratio is calculated by taking capital to divide total risk-weighted assets. Dietrich and Wanzenried (2011) found that CAR and banks' profitability have a significantly negative relationship during the crisis. Numerous existing studies, however, found a shred of evidence that CAR and banks' profitability have a significantly positive relationship (Bourke, 1989; Goddard et al., 2004; Kosmidou and Pasiouras, 2007; Athanasoglou et al., 2008).

There are several studies on the impact of liquidity ratio (denoted by LDR) on banks' profitability. According to Molyneux and Thornton (1992), they concluded that liquidity ratio affect banks' profitability negatively, meaning that the more the bank holds liquidity assets, the more opportunity costs arise, resulting in lower profitability. Conversely, Bourke (1989), and Kosmidou and Pasiouras (2007) stated that liquidity ratio affect banks' profitability positively.

Staff expenses, denoted by SE. This variable is measured by taking staff expenses to divide total assets, According to Bourke (1989), the lower the ratio, the higher the bank profitability.

The yearly growth of deposits variable (DGR), according to Dietrich and Wanzenried (2011), they found that the deposit growth rate affects banks' profitability negatively, suggesting that the more the deposit growth rate, the lower profitability the banks obtain. Similar to DGR, the result also shows that the assets growth rate (AGR) and banks' profitability have a negative relationship (Short, 1979).

The final independent variable, CIR, represents the cost-income ratio. According to Kosmidou and Pasiouras (2007), and Dietrich and Wanzenried (2011), the cost-income ratio has a negative relation to the banks' profitability, indicating that the greater the cost-income ratio, the lower profitability the banks obtain.

### 3.2.3. Model constructions

The authors construct a multiple regression model to estimate the impact of ownership structure on Vietnamese commercial banks' profitability. This model arises as follows:

$$BP_{i,t} = \beta_0 + \beta_1 GOVT_{i,t} + \sum_{k=2}^n \beta_k X_{ki,t} + \theta_i + \varepsilon_{i,t} \tag{1}$$

Where the subscripts  $i = 1, \dots, n$  denotes the cross sections;  $t = 1, \dots, t$  denotes the number of periods of the panel data; BP denotes bank profitability;  $\beta_0$  is the constant term;  $X_k$  is the vector of bank characteristics variables, is the unobserved bank individual effects and  $\varepsilon_{it}$  is the error term.  $X_k$  is the vector of bank characteristics variables shown in Table 2.

In addition, According to Hoeting et al. (1999), to ignore the uncertainty in a model selection with over-confident inferences, the authors also utilise Bayesian Model Averaging (BMA) approach supported by the R statistical software. In this approach, the results will present a few optimal models. Based on the BIC value, the authors can choose the most optimal model (the lowest the BIC value, the most optimal the model).

## 4. EMPIRICAL RESULT AND DISCUSSION

### 4.1. Unit Root Test

To determine whether the variables are stationary or not, the authors use Fisher-type panel unit root tests, and the results are shown in Table 3.

**Table 2: Definition of variables and previous empirical findings**

Dependent variable		Definition		
ROA		The ratio of net profit after tax to average assets		
Independent variables				
Variables	Definition Positive	Authors		Expected sign
Bank ownership				
GOVT	It is a dummy variable, which is assigned value equals to 1 if the bank is state-owned commercial bank (nationalized bank), equals to 0 if otherwise (private bank)	Molyneux and Thornton (1992)	Short, 1979; Bourke, 1989; Marriott and Molyneux, 1991; Barth et al., 2004; Innotta et al., 2007; Dietrich and Wanzenried, 2011	±
Bank-specific variables				
Credit risk (CRED)	It is estimated by non-performing loans ratio, where the non-performing loans is the sum of non-accrual loans and all loans that are past due for ninety days or more	Djalilov and Piesse (2016)	Athanasoglou et al. (2008)	±
Bank size (SIZE)	It is estimated by using the logarithm of total assets		Kosmidou and Pasiouras (2007); Dietrich and Wanzenried (2011)	U-shape
Capital adequacy ratio	It is calculated by taking capital to divide total risk-weighted assets.	Bourke, 1989; Goddard et al., 2004; Kosmidou and Pasiouras, 2007; Athanasoglou et al., 2008	Dietrich and Wanzenried (2011)	±
Liquidity ratio	Cash, bank deposits, and investment securities to total assets	Bourke (1989); Kosmidou and Pasiouras (2007)	Molyneux and Thornton (1992)	±
Staff expenses	Staff expenses to total assets		Bourke (1989)	-
Deposit growth rate	The yearly growth of deposits		Dietrich and Wanzenried (2011)	-
Asset growth rate	The yearly growth of asset		Short, 1979	-
Cost-income ratio	Cost to income		Kosmidou and Pasiouras (2007); Dietrich and Wanzenried (2011)	-

Based on Table 3, we can see that all variables in the model are stationary in both augmented Dickey-Fuller and Phillips-Perron tests ( $P < 10\%$  significance level).

**4.2. The Difference in Bank Ownership**

Figure 1 shows the difference in bank ownership (state-owned commercial banks and other commercial banks) for eight indicators, (a) credit risk, (b) bank size, (c) capital adequacy ratio, (d) liquidity ratio, (e) staff expenses, (f) deposit growth rate, (g) assets growth rate and (h) cost-income ratio.

Figure 1 shows that only the mean of bank size and staff expenses are higher in state-owned commercial banks than in other commercial banks, whereas, the mean of credit risk, capital adequacy ratio, liquidity ratio, deposit growth rate, assets growth rate, and cost-income ratio are lower in state-owned commercial banks than in their competitors.

Also, Table 4 shows that the differences in the mean of credit risk, staff expenses, and assets growth rate were statistically insignificant ( $P$ -value is greater than a 10% significance level), and the differences in the mean of remaining indicators were statistically significant ( $P < 10\%$  significance level).

Before checking whether ownership structure affects Vietnamese commercial banks' profitability or not and identifying factors affecting Vietnamese commercial banks' profitability as well, the authors first analyze the correlation matrix, as well as the variance

inflation factor (VIF) of the independent variables included in the model, as shown in Tables 5 and 6.

Tables 5 and 6 show that the correlation between independent variables is relatively low (smaller than 0.8, and  $VIF < 10$ ), meaning that there is no multicollinearity between independent variables. Also, the authors conduct the Breusch-Pagan, and Ramsey's RESET test to check heteroscedasticity, and omitted variables, and the results are shown in Table 7.

Based on Table 7, we can see that the model is no omit variable ( $P < 1\%$  significance level) and there is no heteroscedasticity ( $P < 5\%$  significance level).

To check whether ownership structure affects Vietnamese commercial banks' profitability or not and identify factors affecting Vietnamese commercial banks' profitability as well, the authors perform multiple regression with the BMA model as follows, and the results are shown in Table 8.

$$ROA_{i,t} = \beta_0 + \beta_1 GOVT_{i,t} + \beta_2 CRED_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 SIZE^2_{i,t} + \beta_5 CAR_{i,t} + \beta_6 LDR_{i,t} + \beta_7 SE_{i,t} + \beta_8 DGR_{i,t} + \beta_9 AGR_{i,t} + \beta_{10} CIR_{i,t} + \vartheta_i + \varepsilon_{i,t} \tag{5}$$

Table 8 shows that there are 05 best models selected based on the BMA model approach. Based on Table 8, we can see the importance of the explanatory variables presented in the second

**Table 3: Panel unit root tests (fisher-type unit root test)**

Variables	Fisher-Augmented Dickey-Fuller	Fisher-Phillips-Perron
ROA	-7.9706***	-7.3954***
Bank ownership	-2.6087*	-2.7299*
Credit risk	-7.5851***	-6.3036***
Bank size	-3.3354**	-3.3264**
Capital adequacy ratio	-6.9811***	-7.1133***
Liquidity ratio	-6.0351***	-4.9799***
Staff expenses	-5.9403***	-5.9319***
Deposit growth rate	-6.6392***	-10.6985***
Asset growth rate	-10.8853***	-10.7565***
Cost-income ratio	-6.7714***	-6.2246***

Reported unit root tests were conducted with one lag, where \*\*\*, \*\*, and \* denote for significant at 1%, 5%, and 10% level, respectively

column ( $P! = 0$ ) representing the probability of occurrence of variables in the models. Specifically, the probability of occurrence of SE, AGR, and CIR in all models is almost 100%, the probability of occurrence of CRED is 77.9%, the probability of occurrence of CAR is 74.1%, and the probability of occurrence of GOVT is 66.8%. In contrast, the probability of occurrence of variables such as LDR, SIZE, SIZE<sup>2</sup>, and DGR is at a very low level (<20%). In addition, looking at Table 8, we can see that the optimal model is the model with statistically significant variables including GOVT, CRED, CAR, SE, AGR, and CIR, where SE is the most influential variable and is positively correlated with the profitability of commercial banks in Vietnam and the probability of this model is 26%. The second optimal model only includes

**Table 4: The t-test for eight indicators**

Indicators	Mean		t	P-value
	State-owned commercial banks (%)	Other commercial banks (%)		
Credit risk	2.39	2.50	0.35	0.73
Bank size	8.80	7.91	-19.56	0.00
Capital adequacy ratio	9.96	14.51	8.25	0.00
Liquidity ratio	29.84	36.94	4.36	0.00
Staff expenses	0.91	0.84	-1.33	0.19
Deposit growth rate	19.72	25.22	2.16	0.03
Assets growth rate	17.88	22.15	1.63	0.11
Cost income ratio	48.94	54.10	1.93	0.06

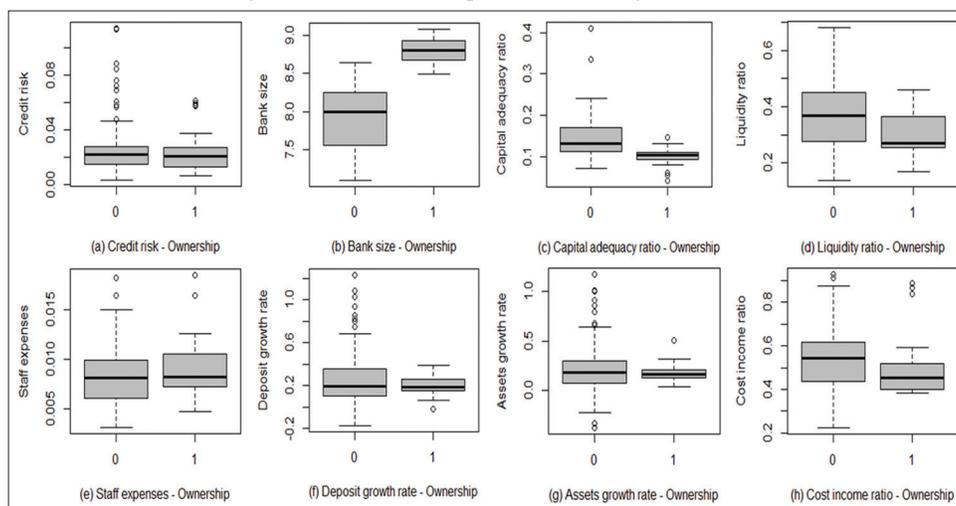
Source: The authors' calculation

**Table 5: Correlation matrix**

	GOVT	CRED	SIZE	CAR	LDR	SE	DGR	AGR	CIR
GOVT	1.00								
CRED	-0.02	1.00							
SIZE	0.68	-0.10	1.00						
CAR	-0.38	-0.01	-0.68	1.00					
LDR	-0.27	-0.19	-0.15	0.09	1.00				
SE	0.10	0.15	-0.03	0.15	-0.41	1.00			
DGR	-0.10	0.05	-0.09	-0.03	0.26	-0.42	1.00		
AGR	-0.07	-0.07	-0.07	0.01	0.29	-0.43	0.63	1.00	
CIR	-0.15	0.27	-0.10	-0.14	-0.23	0.11	0.00	-0.20	1.00

Source: The authors' calculation

**Figure 1: Bank ownership structure and eight indicators**



05 statistically significant variables, GOVT, CRED, SE, AGR, and CIR. However, the probability of this model is relatively low (only 10.4%). The other three models can also be good models for checking and analyzing the factors affecting the profitability of commercial banks in Vietnam (probability of these models are less than 10%). To get a better overview of the models, we can look further at Figure 2.

Based on Figure 2, we can see that a total of 20 models have been selected, and SE, AGR, and CIR are always statistically significant in all models. However, the correlation coefficients of these variables with the profitability of commercial banks in Vietnam are contradictory (SE and AGR are positively correlated, whereas, CIR is negatively correlated). The next important and statistically significant factors are CRED, CAR, and GOVT. Factors such as LDR, SIZE, SIZE<sup>2</sup>, and DGR, although these variables are likely to affect the profitability of commercial banks in Vietnam, they are not as strong as these factors mentioned above.

In conclusion, with the lowest BIC value in the selected models, model 1 is considered the most optimal model. This model is modeled by 06 variables including GOVT, CRED, CAR, SE, AGR, and CIR, and these variables explain 69.5% of the change in the profitability of Vietnamese commercial banks ( $R^2 = 69.5\%$ ).

**Table 6: The variance inflation factor (VIF) of the independent variables**

Variables	VIF	1/VIF	Variables	VIF	1/VIF
GOVT	2.0802	0.4807	SE	1.5119	0.6614
CRED	1.1429	0.8750	DGR	1.8453	0.5419
SIZE	3.1883	0.3136	AGR	1.8790	0.5322
CAR	2.1167	0.4724	CIR	1.3101	0.7633
LDR	1.4005	0.7140			
Mean VIF	1.8305				

Source: The authors' calculation

**Table 7: Breusch-Pagan and Ramsey's RESET test**

Breusch-Pagan test		Ramsey's RESET test	
Breusch-Pagan=18.268	P=0.03219	RESET=56.722	P=0.0000
df=9		df1=2, df2=156	

Source: The authors' calculation

**Table 8: BMA including year-fixed effect**

Variables	P!=0	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	100.0	0.018700	0.021930	0.016580	0.018300	0.013190
GOVT	66.8	-0.002328	-0.003338		-0.002302	
CRED	77.9	-0.049500	-0.051300	-0.048970		-0.043220
SIZE	9.7					
SIZE <sup>2</sup>	9.9					
CAR	74.1	0.019580		0.028280	0.020330	0.027130
LDR	16.2					0.006435
SE	100.0	0.839700	0.912900	0.784100	0.796000	0.860900
DGR	2.5					
AGR	100.0	0.006109	0.006065	0.006338	0.006239	0.006187
CIR	100.0	-0.031040	-0.032210	-0.029570	-0.033010	-0.029230
<b>Yearly-fixed effect</b>		<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
R <sup>2</sup>		0.695	0.682	0.682	0.682	0.689
BIC		-163.8	-162.0	-161.8	-161.6	-160.2
Post prob		0.260	0.104	0.096	0.087	0.043

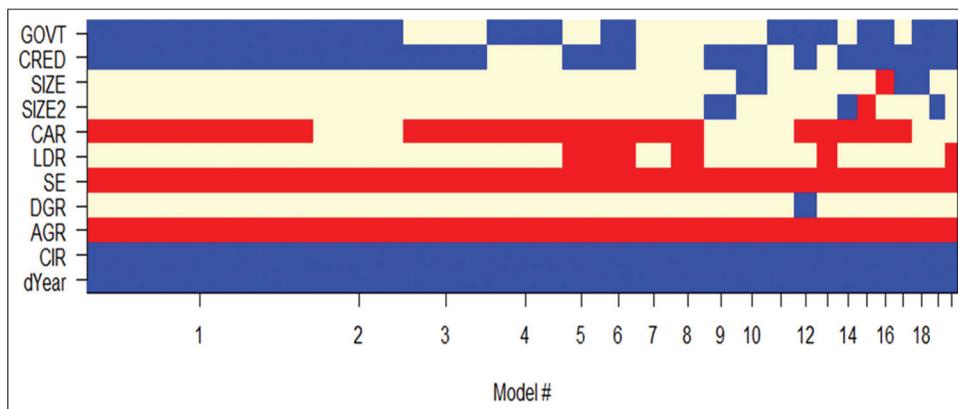
Source: The authors' calculation

The relationship between independent variables with statistical significance and dependent variables is explained as follows:

First, the authors will rely on the GOVT variable to check if the ownership structure affects the profitability of Vietnamese commercial banks. The result shows that this variable is statistically significant, and the sign of the correlation coefficient is negative. This result is similar to the studies of Short (1979), Bourke (1989), Marriott and Molyneux (1991), Barth et al. (2004), Innotta et al. (2007), and Dietrich and Wanzenried (2011), meaning that state-owned commercial banks are less efficient than other commercial banks. In fact, up to now, the number of state-owned commercial banks in Vietnam is 07, of which 03 are taken over by the State Bank of Vietnam due to poor performance (Oceanbank, GPBank, and VNCB), 01 bank with 100% stakes owned by the state (Agribank), and 03 commercial banks with more than 50% stakes owned by the state (VCB, CTG, and BID). However, in recent years, although there are more advantages thanks to the reputation of the state, these banks have not operated effectively. Notably, Agribank's non-performing loans are always high compared to other banks (there are years with non-performing loans ratios of over 6%). Besides, these banks also need to pay more attention to recruiting and training. A series of banker employees' problems mostly belong to state-owned commercial banks. This is the reason why despite a large number of deposits from customers and good loans, the profitability of banks is still low compared to competitors.

In addition to the ownership structure, the authors also identified a number of variables affecting the profitability of Vietnamese commercial banks. Factor has the greatest positively impact on the profitability of commercial banks in Vietnam is SE. To be specific, with a 1% increase staff expenses, the profitability of the bank is increased by about 0.84% and vice versa, holding other factors fixed. This result is contrary to the original expectation of the authors, as well as contrary to the study of Bourke (1989) that the higher the ratio of staff expenses to total assets, the lower the profitability of the bank. It can be seen that to enhance competitiveness in integration, the personnel of commercial banks must not only meet the quantity requirements but also must ensure the quality. However, in order to have a quantity and quality

**Figure 2:** Models selected by BMA including year-fixed effect



workforce, commercial banks need to develop a human resource development strategy in line with the development requirements of each bank. Along with that, banks must also focus on training to improve their professional qualifications, career skills, foreign language knowledge, ability to apply modern technology, as well as executive management capacity. Although these increases the bank's operating expenses, it is very effective in generating profitability.

Although staff expenses have a positive effect, the cost-income ratio is negatively correlated with the profitability of Vietnamese commercial banks. Specifically, when the cost-income ratio increased by 1%, the profitability of Vietnamese commercial banks decreased by about 0.03% and vice versa, holding other factors fixed. This result is similar to the studies of Kosmidou and Pasiouras (2007), and Dietrich and Wanzenried (2011). Also, Table 8 points out that CRED is one of the most important factor affecting the bank profitability of commercial banks in Vietnam negatively, suggesting that the higher the credit risk, the lower the probability of the bank. To be specific, with a 1% increase in credit risk, the profitability of the bank is decreased by about 0.05% and vice versa, holding other factors fixed. This shows that in order to improve profitability, Vietnamese commercial banks need to control the cost-income ratio well. One of the costs is the provision for credit losses. These are expenses to prevent possible losses due to customers not fulfilling their committed obligations. The determination of the level of provision for credit losses is based on the debt classification of banks. Currently, according to Circular No. 09/2014/TT-NHNN of the SBV, the specific credit risk provision for each debt group is as follows: Group 1: 0%, Group 2: 5%, Group 3: 20%, Group 4: 50%, and Group 5: 100%. The level of general provision for credit losses is determined by 0.75% of the total outstanding loans from Group 1 to Group 4. To minimize the cost of provisioning for credit losses, therefore, Vietnamese commercial banks need to check and supervise loans well to limit credit risks. Also, banks need to require borrowers to buy credit insurance. This is considered tool of a highly developed financial market to help banks prevent and hedge credit risk, share risks and create flexibility in managing the loan portfolio of each bank.

The results also indicate that there is a significantly positive relationship between capital adequacy ratio and the profitability

of commercial banks in Vietnam. To be specific, with a 1% increase in capital adequacy ratio, the profitability of the bank is increased by about 0.02%, holding other factors fixed. This result is similar to the studies of Bourke (1989), Goddard et al. (2004), Kosmidou and Pasiouras (2007), and Athanasoglou et al. (2008), indicating that the higher the capital adequacy ratio, the greater the profitability of commercial banks in Vietnam. Therefore, in addition to ensuring this ratio as prescribed by the SBV (according to Circular No. 41/2016/TT-NHNN with a minimum of 8%), banks also need to improve this ratio. To accomplish this, besides raising capital, banks need to restructure their asset portfolios to reduce the proportion of high-risk assets.

Although the bank size variable is almost not statistically significant in the models, the asset growth rate has a positive effect on the profitability of Vietnamese commercial banks. To be specific, with a 1% increase in asset growth rate, the profitability of the bank is increased by about 0.006%, holding other factors fixed. This result is contrary to the studies of Short (1979), indicating that the higher the asset growth rate, the greater the profitability of commercial banks in Vietnam. Based on the characteristics of Vietnamese commercial banks, outstanding loans are the item that accounts for the largest proportion of total assets, and this is also the item that brings the most income to banks. As a result, the asset growth rate is the same as that of outstanding loans. When the outstanding loans increase will increase the profitability of banks. However, banks also need to check and monitor outstanding loans so that the risks are at the lowest level.

## 5. CONCLUSION

Similar to other financial intermediaries, the ultimate goal of commercial banks is for profitability, as it is a prerequisite for any enterprises to survive, help withstands the economic shocks, as well as the financial crisis. This study checks whether ownership structure affecting Vietnamese commercial banks' profitability or not and identifies factors affecting Vietnamese commercial banks' profitability as well. The results conclude that bank ownership is statistically significant and the sign of the correlation coefficient is negative, indicating that state-owned commercial banks are less efficient than other commercial banks. Also, the empirical findings

show that there are some factors affecting the profitability of commercial banks in Vietnam such as credit risk, capital adequacy ratio, cost-income ratio, staff expenses, and asset growth rate, where credit risk and cost-income ratio have a negative relation to banks' profitability.

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