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The Impact of Female Leaders on the Performance of Vietnamese Commercial Banks

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THE IMPACT OF FEMALE LEADERS ON THE PERFORMANCE OF VIETNAMESE COMMERCIAL BANKS

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Abstract

The purpose of this study is to investigate the impact of the percentage of female leaders on the performance of of Vietnamese commercial banks. The article uses secondary data from the financial statements of 31 commercial banks representing Vietnam Commercial Bank in the period 2006-2020. The author employs regression models including Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM) and Random Effects Model (REM). Then, the model is tested with Wald test for Pooled OLS and FEM, followed by Hausman test for FEM and REM, Langman Multiplier test for Pooled OLS and REM to select the optimal model; the next step is correcting the error for the model with the Generalized Least Squares (GLS) technique and finally the GMM method to overcome the endogenous occurrence in the research model. The findings of the study demonstrate that there is a substantial number of female leads in the Board of Directors, but that this has had little impact on enhancing the performance of of Vietnamese commercial banks.

Keywords: Board of Directors, performance, female leaders, bank.

1. Introduction

Female leaders are increasingly being employed in executive leadership roles in enterprises, and many female leaders have held prominent positions in society as well as in executive leadership, such as Ms. Victoria Kwakwa as World Bank Regional Vice President for East Asia from April 15th, 2016, according to Worldbank, and Ms. Alison Rose as CEO of Royal Bank of Scotland (RBS) of the United Kingdom from November 1, 2019, according to NatWest group. In Vietnam, according to the 2019 annual report of Vietnamese commercial banks, Ms. Thai Huong is the Vice Chairman of the BOD cum General Director of Bac A Commercial Joint Stock Bank, and the position of Chairwoman of the BOD is Ms. Tran Thi Thoang; Ho Chi Minh City Development Commercial Joint Stock Bank appointed Ms. Le Thi Bang Tam as Chairwoman of the Board of Directors, Ms. Nguyen Thi Phuong Thao as Standing Vice Chairman of the Board of Directors; Saigon Thuong Tin Commercial Joint Stock Bank has Ms. Nguyen Duc Thach Diem as General Director cum member of the Board of Directors. It

demonstrates that in the world of Finance and Banking, more and more women are taking on executive leadership roles and achieving outstanding results.

To be able to assess the impact of female leaders on the performance of Vietnamese commercial banks, the authors choose the topic "**The Impact of Female Leaders on The Performance of Vietnamese Commercial Banks**" as their research topic. The purpose of this research is to look at the structure of female leaders in the Boards of Directors of Vietnamese commercial banks from 2006 to 2020 in order to show how the percentage of female leaders on the boards of directors affects the performance of Vietnamese commercial banks.

2. Literature review

Theoretical overview

Theory of Resource Dependence and Gender Diversity in the Board of Directors.

Pfeffer and Salancik's (1978) Resource Dependence Theory indicates that enterprises rely on resources outside of themselves to exist. Businesses are in danger as a result of these dependencies. Businesses can link up with external entities that control those resources to lessen dependency and uncertainty.

Pfeffer and Salancik (1978) attribute three benefits to board linkages: advice and counsel, legitimacy and channels for communicating. In terms of advice and counsel, accessible materials indicate that gender-diverse governance boards are involved in higher-quality discussions to address complex issues, some of which can be considered unattractive in the male councils, Kravitz (2003), Huse and Solberg (2006). As for legitimacy, corporate practices are legitimized by social norms and values. Cox et al. (1991) proposes value-in-diversity hypotheses by indicating that, as women's equal rights increasingly become a trend in society, it is legal for companies to appoint female directors to their boards. Female executives with diverse experiences and viewpoints are better suited to link their companies with female customers and the female workforce in society when it comes to channels for communicating. Hillman et al. (2007) applied resource dependence theory to examine the gender diversity of the board and found that US firms with gender diversity boards can achieve these benefits. In summary, resource dependence theory points to the beneficial effects of gender diversity boards.

Agency theory, managerial theory of the firm and gender diversity theory in the Board of Directors

In the enterprise, the agent problem arises when the manager does not have the good interests of the shareholders to make decisions. The solution offered is to increase supervision from the Board of Directors. Fama and Jensen (1983) argue that the guidance and supervision of the BOD are essential in minimizing these conflicts of interest. Female directors are more involved in supervisory activities, according to

empirical evidence. More gender-diverse boards, according to Gul et al. (2008) and Adam and Ferreira (2009), necessitate greater audit and managerial responsibility.
The influence of BOD gender diversity on corporate decisions also depends on the quality of corporate governance. In well-managed firms, the gender diversity of the BOD can be detrimental to firm value through unnecessary oversight, Adams and Ferreira (2009). Ferreira and Adams (2009). Gul et al. (2011), on the other hand, argue that having a gender-diverse BOD can help organizations improve their governance.

3. Data and methodology

- Bank performance

The ratio between the results achieved and the costs required to achieve that result is used to assess efficiency. Commercial banks' performance can be measured using a variety of indicators. This study uses three financial indicators to measure the performance of commercial banks, namely Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). According to Rose (2004) financial ratios such as ROA, ROE and NIM are calculated using the following formulas:

$$ROA = \frac{\text{Return}}{\text{Assets}}$$

$$ROE = \frac{\text{Return}}{\text{Equity}}$$

$$NIM = \frac{\text{Investment returns} - \text{Interest expenses}}{\text{Average Earning Assets}}$$

Previous studies have utilized financial indicators such as ROA, ROE, and NIM to measure operational efficiency, such as Ameur and Mhiri (2013), who used three financial indicators to measure the performance of Tunisian commercial banks.
The author of this research article claims that three financial indicators, ROA, ROE, and NIM, are used to quantify the operational performance of Vietnamese commercial banks and that they are also a dependent variable in the research model of bank performance (BPer) variable.

- Female leaders

In this research, the authors examine the impact of female leaders on the performance of Vietnamese commercial banks through the percentage of female leaders in the Board of Directors as the Women variable.

- Data

Following data collection, the study examines the most complete data of 31 Vietnamese commercial banks using secondary data from audited financial statements issued on the Vietnamese stock exchange for the years 2006 to 2020. Furthermore, secondary data was gathered from annual reports, management reports from 31 Vietnamese commercial banks, data from the World Bank, and data from related articles.

- Methodology

Research model

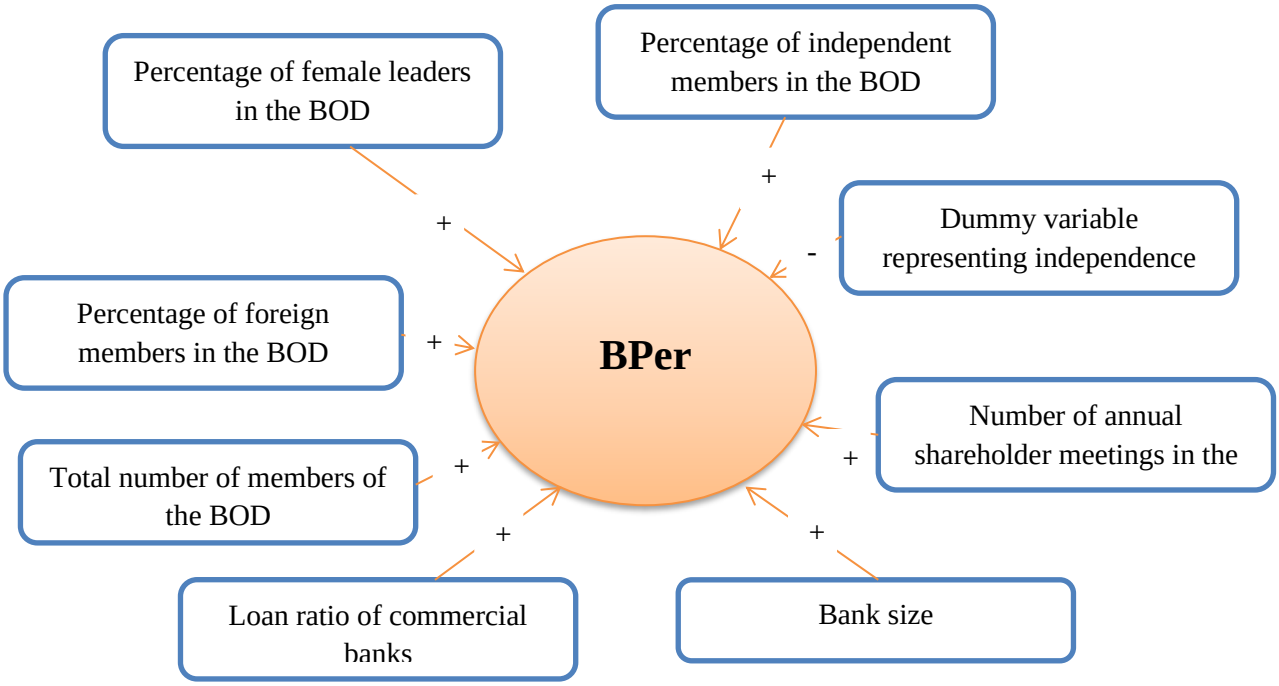
The authors offer the following model to explain the impact of female leaders on the performance of Vietnamese commercial banks, based on prior research by García-Meca et al. (2015):

$$\mathbf{BPer_{it} = \beta_0 + B_1 Women_{it} + \beta_2 For_{it} + \beta_3 BoardSize_{it} + B_4 Indep_{it} + \beta_5 Duality_{it} + \beta_6 Act_{it} + \beta_7 BankSize_{it} + \beta_8 Loans_{it} + u_{it}}$$

In which:

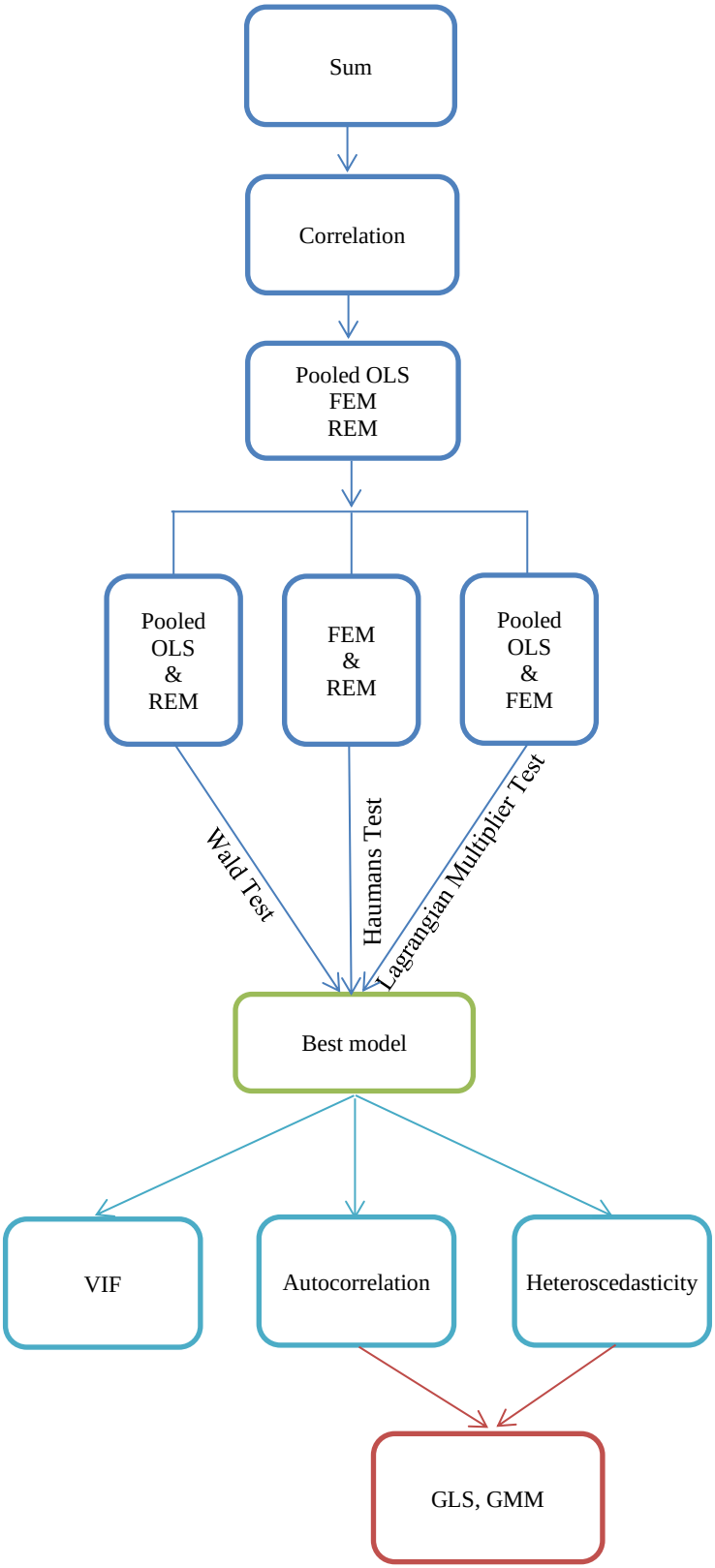
- BPer: Bank performance.
- β_0: intercept factor.
- $\beta_{1, \dots} \beta_{10}$: slopes of the independent variables.
- u: statistical residuals.
- i: The index representing commercial banks.
- t: the index representing the observation period (from 2006 to 2020).

Figure 1: Model research



This study uses estimation methods for regression models with methods including Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), Random Effects Model (REM), followed by a test to select a suitable model, testing, and handling defects on the selected model. In addition, the study also uses the Generalized Method of Moments (GMM) to handle endogenous problems (if any) in the research model with the following diagram:

4. Figure 2: Research methodology



4. Results and discussion

4.1. Results research

4.1.1. Descriptive Statistics

Table 1: Descriptive Statistics

Variables	Observation number	Average value	Standard deviation	Smallest value	Greatest value
ROE	432	0,0929672	0,0648731	-0,0459247	0,3055816
ROA	432	0,0089719	0,0069152	-0,0038244	0,0595185
NIM	432	0,0285327	0,0128337	-0,0061374	0,1036237
Women	416	0,1773702	0,1578423	0	0,8
For	416	0,0778916	0,1185086	0	0,4286
BoardSize	417	7,122302	1,743644	0	14
Indep	416	0,853813	0,1398974	0,125	1
Duality	386	0,0025907	0,0508987	0	1
Act	288	1,118056	0,3824828	0	3
BankSize	433	31,85179	1,391721	27,38751	34,9553
Loans	433	0,5422404	0,1309247	0,1138	0,8448
Bank	465	16	8,953905	1	31

Source: Result from the analysis

4.1.2. Correlation coefficents

Table 2: Correlation coefficents of variable ROE

	ROE	L.ROE	Women	For	BoardSize	Indep	Duality	Act	BankSize	Loans	Bank
ROE	1.0000										
L.ROE	0.1267	1.0000									
Women	-0.1628	0.0751	1.0000								
For	0.2037	-0.0906	-0.1494	1.0000							
BoardSize	0.2450	-0.1031	-0.0945	0.3486	1.0000						
Indep	0.1957	-0.0354	-0.2136	0.1097	0.0538	1.0000					
Duality	0.0052	0.0050	0.1532	-0.0431	-0.0120	0.0084	1.0000				
Act	0.0925	0.0799	-0.0923	0.2433	0.0876	-0.0294	-0.0199	1.0000			
BankSize	0.4917	-0.0864	-0.0049	0.2744	0.3929	-0.0110	0.0257	0.1514	1.0000		
Loans	0.1423	-0.0838	-0.0164	-0.0492	0.0873	-0.1805	0.0241	0.0870	0.3008	1.0000	
Bank	0.0559	0.0966	-0.3324	0.0684	-0.2187	0.0922	0.0572	0.0956	-0.0158	-0.1176	1.0000

Source: Result from the analysis

Table 3: Correlation coefficents of variable ROA

	ROA	L.ROA	Women	Forneigners	BoardSize	Indep	Duality	Act	BankSize	Loans	Bank
ROA	1.0000										
L.ROA	0.1395	1.0000									
Women	-0.2465	0.0265	1.0000								
For	0.1353	-0.0983	-0.1494	1.0000							
BoardSize	0.1366	-0.0743	-0.0945	0.3486	1.0000						
Indep	0.2529	0.0408	-0.2136	0.1097	0.0538	1.0000					
Duality	-0.0054	-0.0233	0.1532	-0.0431	-0.0120	0.0084	1.0000				
Act	0.1106	-0.0020	-0.0923	0.2433	0.0876	-0.0294	-0.0199	1.0000			
BankSize	0.1618	-0.1158	-0.0049	0.2744	0.3929	-0.0110	0.0257	0.1514	1.0000		
Loans	0.0696	-0.2004	-0.0164	-0.0492	0.0873	-0.1805	0.0241	0.0870	0.3008	1.0000	
Bank	0.1158	0.1299	-0.3324	0.0684	-0.2187	0.0922	0.0572	0.0956	-0.0158	-0.1176	1.0000

Source: Result from the analysis

Table 4: Correlation coefficents of variable NIM

	NIM	L.NIM	Women	For	BoardSize	Indep	Duality	Act	BankSize	Loans	Bank
NIM	1.0000										
L.NIM	-0.0490	1.0000									
Women	-0.2603	0.0106	1.0000								
For	0.0314	-0.1585	-0.1494	1.0000							
BoardSize	0.0674	-0.1050	-0.0945	0.3486	1.0000						
Indep	0.1413	0.0378	-0.2136	0.1097	0.0538	1.0000					
Duality	-0.0367	0.0104	0.1532	-0.0431	-0.0120	0.0084	1.0000				
Act	0.1054	-0.0918	-0.0923	0.2433	0.0876	-0.0294	-0.0199	1.0000			
BankSize	0.0794	-0.1051	-0.0049	0.2744	0.3929	-0.0110	0.0257	0.1514	1.0000		
Loans	0.2437	-0.2398	-0.0164	-0.0492	0.0873	-0.1805	0.0241	0.0870	0.3008	1.0000	
Bank	0.1231	0.1444	-0.3324	0.0684	-0.2187	0.0922	0.0572	0.0956	-0.0158	-0.1176	1.0000

Source: Result from the analysis

4.1.3. Model testing

4.1.3.1. VIF test

Table 5: VIF coefficients of independent variables

Variable	VIF	1/VIF
Women	1,12	0,895766
For	1,21	0,825621
BoardSize	1,26	0,791688
Indep	1,13	0,885623
Duality	1,03	0,974566
Act	1,08	0,930097
Banksize	1,35	0,738174
Loans	1,17	0,857417
Mean VIF	**1,17**	

Source: Extracted from Stata 15 software.

4.1.3.2. Model choice

Table 6: Model choice of the dependent variable ROE.

Tests	Pooled OLS	FEM	REM	FEM	Pooled OLS	REM
F-test	F – test that all u_i=0:F(12,251)=8,34 Prob > F=0,0000 < α => select FEM					

Hausman test			Prob>chi2= 0,2247>α => select REM			
Breusch and Pagan test					Prob>chibar2=0,0000 <α => select REM	

Source: Extracted from Stata 15 software.

According to the findings of the model selection test, the REM model is the best fit for the dependent variable ROE.

Table 7: Model choice of the dependent variable ROA.

Tests	**Pooled OLS**	**FEM**	**REM**	**FEM**	**Pooled OLS**	**REM**
F-test	F – test that all u_i=0:F(12,251)=6,66 Prob > F=0,0000 < α => select FEM					
Hausman test			Prob>chi2=0,0809>α => select REM			
Breusch and Pagan test					Prob>chibar2=0,0000 <α => select REM	

Source: extracted from Stata 15 software.

According to the findings of the model selection test, the REM model is the best fit for the dependent variable ROE.

Table 8: Model choice of the dependent variable NIM

Tests	**Pooled OLS**	**FEM**	**REM**	**FEM**	**Pooled OLS**	**REM**
F – Test	F – test that all u_i=0:F(12,251)=3,62 Prob > F=0,0001 < α => select FEM					
Hausman – Test			Prob>chi2=0,0000<α => select FEM			
Breusch and Pagan – Test					Prob>chibar2=1,0000 >α => select Pooled OLS	

Source: extracted from Stata 15 software.

According to the findings of the model selection test, the FEM model is the best fit for the dependent variable NIM.

4.1.3.3. Autocorrelation and heteroscedasticity tests

Tests for autocorrelation and heteroscedasticity with the REM estimation model of the dependent variable ROE.

Table 9: The results of the model defect test with the dependent variable ROE

Tests	Statistics	Hypothesis	Results
Autocorrelation test	Prob > F = 0,0976 > α	H_0: no autocorrelation H_1: have autocorrelation	No autocorrelation
Heteroscedasticity test	Prob>chibar2=0,0000 <α	H_0: no heteroscedasticity H_1: have heteroscedasticity	Have heteroscedasticity

Source: extracted from Stata 15 software.

The model is heteroscedastic and does not contain autocorrelation. To overcome the heteroscedasticity, the author uses regression according to the GLS method.

Tests for autocorrelation and heteroscedasticity with the REM estimation model of the dependent variable ROA.

Table 10: The results of the model defect test with the dependent variable ROA

Tests	Statistics	Hypothesis	Results
Autocorrelation test	Prob > F = 0,0166 < α	H_0: no autocorrelation H_1: have autocorrelation	The model occurs autocorrelation.
Heteroscedasticity test	Prob>chibar2=0,0000 <α	H_0: no heteroscedasticity H_1: have heteroscedasticity	The model is subject to heteroscedasticity.

Source: Extracted from Stata 15 software.

According to the findings, the model exhibits autocorrelation and heteroscedasticity, which is overcome by using the GLS approach.

Tests for autocorrelation and heteroscedasticity with the REM estimation model of the dependent variable NIM.

Table 11: The results of the model defect test with the dependent variable NIM

Tests	Statistics	Hypothesis	Results
Autocorrelation test	Prob > F = 0,6195> α	H_0: no autocorrelation H_1: have autocorrelation	The model occurs autocorrelation.
Heteroscedasticity test	Prob>chibar2=0,0000 <α	H_0: no heteroscedasticity H_1: have heteroscedasticity	The model is subject to heteroscedasticity.

Source: Extracted from Stata 15 software.

4.1.4. Result

Table 12: Regression results with dependent variable ROE

ROE						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Variables	**Pooled OLS**	**FEM**	**REM**	**GLS**	**DGMM**	**SGMM**
Women	-0.0332	-0.0410**	-0.0395**	-0.0306	-0.0467**	-0.0472***
	(0.0228)	(0.0199)	(0.0199)	(0.0199)	(0.0195)	(0.0108)
For	-0.0141	0.0117	0.00803	-0.0186	-0.0299	-0.0480
	(0.0306)	(0.0269)	(0.0268)	(0.0263)	(0.0453)	(0.0377)
Boardsize	0.000877	-0.000487	-8.64e-05	0.000127	-0.00155	0.00130
	(0.00231)	(0.00210)	(0.00208)	(0.00178)	(0.00253)	(0.00218)
Indep	0.0761***	0.0501**	0.0528**	0.0613***	0.0932***	0.0720**
	(0.0273)	(0.0240)	(0.0240)	(0.0224)	(0.0291)	(0.0237)
Duality	0.00383	0.00306	0.00180	0.0110	0.0306***	0.0146***
	(0.0581)	(0.0510)	(0.0510)	(0.0557)	(0.00886)	(0.00389)
Act	-0.000391	-0.00207	-0.00217	-0.00693	-0.00239	0.00126
	(0.00932)	(0.00839)	(0.00836)	(0.00744)	(0.00610)	(0.00924)
Banksize	0.0303***	0.0311***	0.0306***	0.0285***	0.0309***	0.0255***
	(0.00373)	(0.00338)	(0.00336)	(0.00286)	(0.00279)	(0.00153)
Loans	0.00323	0.0530*	0.0444	0.0838***	0.156***	0.0807
	(0.0311)	(0.0301)	(0.0297)	(0.0275)	(0.0426)	(0.0502)
L.ROE					0.148	-0.0217
					(0.0990)	(0.0742)
Constant	-0.952***	-0.973***	-0.952***	-0.923***		-0.835***
	(0.115)	(0.105)	(0.105)	(0.0916)		(0.0585)

ROE						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Variables	**Pooled OLS**	**FEM**	**REM**	**GLS**	**DGMM**	**SGMM**
Observations	272	272	272	272	189	250
R-squared	0.275	0.345				
Number of YEAR		13	13	13	12	13

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Extracted from Stata 15 software.

Table 13: Regression test results of GMM method

	DGMM	**SGMM**	
AR(1)	0,010< α	0,012<α	
AR(2)	0,918> α	0,745>α	
Sargan test	0,780> α	0,189>α	
Hansen test	0,732> α	0,473<α	
Number of group và number of instrument	12>11	13>12	
Results	Condition satisfied	Condition satisfied	

Source: Authors' compilation from research results.

Table 14: Model results with dependent variable ROA

ROA						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**Pooled OLS**	**FEM**	**REM**	**GLS**	**DGMM**	**SGMM**
Women	-0.00623**	-0.00713***	-0.00690***	-0.00514**	-0.00806**	-0.00760***
	(0.00240)	(0.00216)	(0.00216)	(0.00206)	(0.00330)	(0.00182)
For	-0.00202	0.000416	-0.000137	-0.00234	-0.00251	-0.00347
	(0.00322)	(0.00292)	(0.00291)	(0.00274)	(0.00433)	(0.00422)
Boardsize	0.000167	1.26e-05	7.90e-05	0.000210	-7.82e-05	0.000243
	(0.000243)	(0.000228)	(0.000225)	(0.000201)	(0.000300)	(0.000207)
Indep	0.00925***	0.00655**	0.00692***	0.00572**	0.00680**	0.00740***
	(0.00288)	(0.00261)	(0.00261)	(0.00234)	(0.00254)	(0.00234)
Duality	0.00137	0.000357	0.000268	-0.00144	-0.00380	-0.00272**
	(0.00612)	(0.00554)	(0.00554)	(0.00673)	(0.00224)	(0.000984)
Act	0.000989	0.000835	0.000870	0.000531	0.00134*	0.00118
	(0.000983)	(0.000912)	(0.000907)	(0.000853)	(0.000628)	(0.00129)
Banksize	0.000872**	0.000948**	0.000883**	0.000749**	0.000850	0.000237
	(0.000393)	(0.000367)	(0.000365)	(0.000316)	(0.000734)	(0.000449)
Loans	0.00212	0.00711**	0.00592*	0.00720**	0.0179***	0.0108**
	(0.00328)	(0.00327)	(0.00321)	(0.00290)	(0.00419)	(0.00382)
L.ROA					0.163	0.0102
					(0.222)	(0.0905)
Constant	-0.0302**	-0.0319***	-0.0293***	-0.0269***		-0.0137
	(0.0121)	(0.0114)	(0.0113)	(0.00994)		(0.0152)
Observations	272	272	272	272	189	250
R-squared	0.110	0.143				
Number of YEAR		13	13	13	12	13

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: extracted from Stata 15 software.

Table 15: Regression test results of GMM method

	DGMM	**SGMM**	
AR(1)	0,105> α	0,022<α	
AR(2)	0,182> α	0,266>α	
Sargan test	0,212> α	0,047<α	
Hansen test	0,498> α	0,308> α	
Number of group và number of instrument	12>11	13>12	
Results	Condition unsatisfied	Condition satisfied	

Source: Authors' compilation from research results.

Table 16: Regression results with dependent variable NIM

NIM						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Variables	**Pooled OLS**	**FEM**	**REM**	**GLS**	**DGMM**	**SGMM**
Women	-0.0175***	-0.0188***	-0.0175***	-0.0180***	-0.0231***	-0.0230***
	(0.00482)	(0.00460)	(0.00482)	(0.00543)	(0.00681)	(0.00442)
For	-0.00569	-0.00552	-0.00569	-0.00749	-0.0148	-0.00911
	(0.00647)	(0.00621)	(0.00647)	(0.00846)	(0.0102)	(0.00739)
Boardsize	2.11e-05	-7.19e-05	2.11e-05	0.000803	1.32e-05	5.09e-05
	(0.000488)	(0.000486)	(0.000488)	(0.000519)	(0.000445)	(0.000203)
Indep	0.0138**	0.00858	0.0138**	0.00894*	0.00566	0.0126*
	(0.00579)	(0.00555)	(0.00579)	(0.00518)	(0.00823)	(0.00593)
Duality	-0.00225	-0.00626	-0.00225	0.00110	-0.0120***	-0.00769***
	(0.0123)	(0.0118)	(0.0123)	(0.00911)	(0.00329)	(0.00160)
Act	0.00196	0.00293	0.00196	0.00108	0.000423	0.00306
	(0.00197)	(0.00194)	(0.00197)	(0.00145)	(0.00704)	(0.00404)
Banksize	1.59e-05	0.000254	1.59e-05	-0.00205	-0.000273	0.000344
	(0.000790)	(0.000782)	(0.000790)	(0.00134)	(0.00111)	(0.000636)
Loans	0.0257***	0.0351***	0.0257***	0.0444***	0.0407***	0.0419***
	(0.00659)	(0.00695)	(0.00659)	(0.00750)	(0.00877)	(0.00680)
2.Bank				-0.000785		
				(0.00419)		
3.Bank				-0.00658		
				(0.00560)		
4.Bank				-0.0121**		
				(0.00615)		
5.Bank				-0.0100**		
				(0.00481)		
6.Bank				-0.00508		
				(0.00554)		

NIM						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**Pooled OLS**	**FEM**	**REM**	**GLS**	**DGMM**	**SGMM**
7.Bank				0.000271		
				(0.00505)		
8.Bank				-0.00448		
				(0.00586)		
9.Bank				-0.00982**		
				(0.00420)		
10.Bank				0.00329		
				(0.00470)		
11.Bank				0.000458		
				(0.00495)		
12.Bank				0.00313		
				(0.00492)		
13.Bank				0.00860		
				(0.00552)		
14.Bank				0.00616		
				(0.00511)		
15.Bank				-0.00520		
				(0.00532)		
16.Bank				-0.00263		
				(0.00456)		
17.Bank				-0.000827		
				(0.00435)		
18.Bank				-0.0164***		
				(0.00577)		
19.Bank				-0.0222***		
				(0.00547)		
20.Bank				-0.0122**		
				(0.00565)		
21.Bank				0.00208		
				(0.00526)		
22.Bank				-0.0137***		
				(0.00492)		
23.Bank				0.000613		
				(0.00513)		
24.Bank				-0.00671		
				(0.00548)		
25.Bank				0.00635		
				(0.00431)		
26.Bank				-0.00176		
				(0.00410)		
27.Bank				-0.0171***		
				(0.00576)		
28.Bank				0.000567		
				(0.00533)		
29.Bank				-0.00112		

NIM						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Variables	**Pooled OLS**	**FEM**	**REM**	**GLS**	**DGMM**	**SGMM**
				(0.00411)		
30.Bank				0.0276***		
				(0.00515)		
31.Bank				-0.0123**		
				(0.00500)		
L.NIM					-0.269**	0.0305
					(0.121)	(0.0947)
Constant	0.00437	-0.00436	0.00437	0.0625		-0.0151
	(0.0242)	(0.0243)	(0.0242)	(0.0415)		(0.0233)
Observations	272	272	272	272	189	250
R-squared	0.136	0.185				
Number of YEAR		13	13	13	12	13

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: extracted from Stata 15 software.

Table 17: Regression test results of GMM method

	DGMM	**SGMM**	
AR(1)	0,039< α	0,015<α	
AR(2)	0,150> α	0,355>α	
Sargan test	0,036< α	0,939>α	
Hansen test	0,081> α	0,961> α	
Number of group và number of instrument	12>11	13>12	
Results	Condition satisfied	Condition satisfied	

Source: Authors' compilation from research results.

4.2. Discussion

The DGMM approach does not entirely satisfy the conditions to ensure model quality for the dependent variables of ROE, ROA, and NIM, as evidenced by the regression results with three dependent variables of ROE, ROA, and NIM. The SGMM approach satisfies all of the requirements for first-order autocorrelation, second-order autocorrelation, the tight constraint test for the instrumental variable, and the appropriateness test for the instrumental variable. As a result, we can observe that the SGMM approach meets all of the model quality assurance criteria, therefore it is used to regress three dependent variables: ROE, ROA, and NIM.

The findings reveal that the Women variable is statistically significant and has a negative impact on the performance of Vietnamese commercial banks as assessed by the dependent variables of ROE, ROA, and NIM.

The Women variable has statistical significance for the performance of Vietnamese commercial banks as measured by ROE, ROA, and NIM. This demonstrates that having a higher percentage of female leaders in the BOD does not improve the operational efficiency of Vietnamese commercial banks.

The variable percentage of BOD members who are foreigners in total BOD members (For), the numerical variable of BOD members (Boardsize), the numerical variable of BOD meetings (Act) have no statistical significance for the operational efficiency of Vietnamese commercial banks. This demonstrates that the number of foreign BOD members, BOD members, and BOD meetings has no bearing on the performance of Vietnamese commercial banks.

The numerical variable of independent members in the BOD over the total number of BOD members (Indept) is significant and has a positive impact on ROE, ROA and NIM. It indicates that the higher the number of independent members on the BOD compared to the overall number of members on the BOD, the more efficient the Vietnamese commercial banks' operations are.

The dummy variable equals 1 when the CEO is the chairman of the BOD, and it equals 0 (Duality) when the CEO is not. It is substantial and has a positive impact on ROE, but it is significant and has a negative impact on ROA and NIM. As a result, when the CEO is also the chairman of the BOD, the company will perform well in terms of ROE but not in terms of ROA or NIM.

The Banksize variable is considerable and has a positive impact on ROE; however, it is not significant with ROA or NIM. The larger the bank size, the more effective the operation of Vietnamese commercial banks measured by ROE.

With ROE, the variable of loan-to-total assets is not important; but, with ROA and NIM, it is considerable and has a favorable impact. The higher the loan-to-total assets ratio, the more efficient Vietnamese commercial banks' operations will be.

5. Conclusions

The Women variable is significant in the regression results and has a negative impact on the three indicators of ROE, ROA, and NIM. This is in contrast to the findings of Garca-Meca et al. (2015), who discovered that the number of female leaders in the BOD had a significant and favorable impact on commercial bank performance as evaluated by the Tobin'Q and ROA index.

From the research data, female leaders make up the majority of BOD members, with only a few female leaders holding the position of Chairman of the BOD, such as Ms. Tran Thi Thoang of Bac A Commercial Joint Stock Bank and Ms. Le Thi Bang Tam of Ho Chi Minh City Development Commercial Joint Stock Bank. This contributes to

female leaders' decision-making being limited when they are members of the BOD. The decision-making process for the position of Chairman of the BOD will be decisive and contribute to the operational efficiency of Vietnamese commercial banks.

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