POLITICALLY CONNECTED BOARDS AND FIRM PERFORMANCE: THE CASE OF VIETNAM

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Received: March 10, 2024 Accepted: May 21, 2024 Published: July 25, 2024
DOI: 10.52932/jfm.v15i5.501

Appendix 1. A summary of dependent variables used in testing the three hypotheses

Indicator	Variable name	Formula	Hypothesis
Total factor productivity	TFP	Residuals taken from the Cobb-Douglass production function	H_1
Return on equity	ROE	$\frac{\text{Net income}}{\text{Total shareholders'equity}}$	H_2
Return on assets	ROA	$\frac{\text{Net income}}{\text{Total assets}}$	H_2
Market-to-book value ratio	MB	$\frac{\text{Market capitalization}}{\text{Total book value}}$	H_3
Tobin's Q	TOBIN	$\frac{\text{Market value (number of shares x share price)}}{\text{Total assets value of firm}}$	H_3

Appendix 2. A summary of independent and control variables used in testing the three hypotheses

Indicator	Variable name	Definition
Political connection	PC	Equals 1 a firm satisfies the study's criteria
Firm size	FSIZE	Logarithm of total assets
Financial leverage	LEV	$\frac{\text{Total liabilities}}{\text{Total equity}}$
Block	BLOCK	Fraction of shares owned by board members
Volatility	VOLAT	12-month stock price volatility
Free cash flow	FCF	$\frac{\text{Free cash flow}}{\text{Total assets}}$
Firm growth	GROWTH	Growth rate of total assets
Board size	BSIZE	Number of board members
Duality	DUAL	Binary variable equals 1 if chairman is the CEO
CO	CO	Binary variable equals 1 if firm's top five shareholders possess more than 20% of firm value.

Indicator	Variable name	Definition
Independent	IND	The percentage of independent board members
Directors age	DIRAGE	The average age of board members
Return on assets	ROA	$\frac{\text{Net income}}{\text{Total assets}}$
Time control variables	-	Year dummy variables
Firm's characteristic control variables	-	Industry classification dummy variables

Appendix 3. Summary of independent and control variables in each model

Variable name	Coefficient	Reference	Expected impact
Independent variables			
H_1: Political connections (PC) negatively affect firm productivity			
PC	β_1	Chen et al. (2020)	-
H_2: Political connections (PC) negatively affect firm profitability			
PC	β_1	Wong (2010); Faccio (2006)	-
H_3: Political connections (PC) negatively affect firm value			
PC	β_1	Ang et al. (2013); Ha & Frömmel (2020)	-
Control variables			
H_1: Political connections (PC) negatively affect firm productivity			
FSIZE	γ_1	Jiang et al. (2015); Giannetti et al. (2015)	+
LEV	γ_2	Jiang et al. (2015); Giannetti et al. (2015)	+
BLOCK	γ_3	Jiang et al. (2015); Giannetti et al. (2015); Chen et al. (2020)	-
VOLAT	γ_4	Jiang et al. (2015); Giannetti et al. (2015); Chen et al. (2020)	-
FCF	γ_5	Chen et al. (2020)	+
H_2: Political connections (PC) negatively affect firm profitability			
FSIZE	γ_1	Nguyen et al. (2020); Vu et al. (2019); S. Chen (2020)	+
LEV	γ_2	H. Li et al. (2008); Nguyen et al. (2020); Chen et al. (2020)	-
BLOCK	γ_3	Jiang et al. (2015); Giannetti et al. (2015); Chen et al. (2020)	+
VOLAT	γ_4	Jiang et al. (2015); Giannetti et al. (2015); Chen et al. (2020)	-
FCF	γ_5	Jiang et al. (2015); Giannetti et al. (2015); Chen et al. (2020)	+
H_3: Political connections (PC) negatively affect firm value			
GROWTH	γ_1	Ang et al. (2013); Ha et al. (2018); Ha & Frömmel (2020)	+
BSIZE	γ_2	Ha et al. (2018)	+
FSIZE	γ_3	Ha et al. (2018)	-
LEV	γ_4	Ha et al. (2018)	-

Variable name	Coefficient	Reference	Expected impact
DUAL	γ_5	Ang et al. (2013)	-
CO	γ_6	Ha & Frömmel (2020)	+
IND	γ_7	Ang et al. (2013)	+
DIRAGE	γ_8	Ha & Frömmel (2020)	+
ROA	γ_9	Ha et al. (2020); Ang et al. (2013)	+

Appendix 4. Quantity and percentage of each industry

ICB Industry	Number of firms	Percentage of firms	Number of PC firms	Percentage of PC firms
Telecommunications	2	0.27%	1	50.00%
Technology	15	2.03%	2	13.33%
Oil & Gas	16	2.17%	8	50.00%
Health Care	20	2.71%	6	30.00%
Utilities	36	4.88%	9	25.00%
Consumer Services	46	6.23%	9	19.57%
Basic Materials	85	11.52%	17	20.00%
Consumer Goods	94	12.74%	11	11.70%
Financials	123	16.67%	43	34.96%
Industrials	301	40.79%	68	22.59%
Total	738	100%	174	

Appendix 5. Summary statistics of the models for firm profitability

	Obs.	Mean	SD	Median	Min	Max
PC	4,207	0.25	0.43	0.00	0.00	1.00
FSIZE	4,207	27.67	1.48	27.60	23.72	33.68
LEV	4,207	0.70	0.78	0.46	-0.87	4.96
BLOCK	4,207	0.08	0.15	0.01	0.00	0.96
FCF	4,207	0.11	0.20	0.10	-2.22	1.15
VOLAT	4,207	0.49	0.24	0.46	0.02	9.17
ROA	4,207	0.07	0.08	0.05	-0.79	0.84
ROE	4,207	0.14	0.16	0.12	-1.60	2.93
TFP	2,409	0.00	0.30	0.00	-3.26	2.14

Appendix 6. Summary statistics of the models for firm value

	Obs.	Mean	SD	Median	Min	Max
LEV	5,876	0.66	1.04	0.40	-49.46	4.96
ROA	5,876	0.06	0.15	0.05	-6.38	2.21
FSIZE	5,876	27.26	1.55	27.19	23.33	33.68
BLOCK	5,876	0.09	0.15	0.02	0.00	0.96
MB	5,876	1.13	1.73	0.86	-101.01	16.46
TOBIN	5,876	1.10	0.67	0.94	0.09	12.20
GROWTH	5,876	0.13	0.54	0.05	-0.84	21.19
PC	5,876	0.23	0.42	0.00	0.00	1.00
DUAL	5,876	0.25	0.43	0.00	0.00	1.00
IND	5,876	0.06	0.10	0.00	0.00	0.78
BSIZE	5,876	9.90	3.39	10.00	1.00	31.00
DIRAGE	5,876	46.54	4.97	46.75	26.00	67.33
CO	5,876	0.15	0.36	0.00	0.00	1.00

Appendix 7. Correlation matrix of variables in the equation of firm productivity and profitability

	PC	FSIZE	LEV	BLOCK	FCF	VOLAT	ROA	ROE
FSIZE	0.27*	-						
LEV	0.10*	0.27*	-					
BLOCK	-0.08*	-0.01	0.09*	-				
FCF	0.03	0.03	-0.10*	-0.06*	-			
VOLAT	-0.10*	-0.31*	0.06*	0.02	-0.09*	-		
ROA	-0.02	-0.05*	-0.33*	-0.10*	0.37*	-0.14*	-	
ROE	-0.04	0.01	-0.14*	-0.06*	0.26*	-0.09*	0.74*	-
TFP	-0.02	0.02	-0.10*	-0.06*	0.33*	-0.08*	0.35*	0.26*

**: significant at level of 5%*

Appendix 8. Correlation matrix of variables in the equation of firm value

	LEV	ROA	FSIZE	MB	TOBIN	GR	PC	DUAL	IND	BSIZE	DIRAGE
ROA	-0.09*	-									
FSIZE	0.24*	0	-								
MB	0.43*	0.16*	-0.05*	-							
TOBIN	-0.10*	0.23*	-0.09*	0.58*	-						
GR	0.06*	0.06*	0.04*	0.06*	0.08*	-					
PC	0.07*	-0.04*	-0.01	0.03*	0.04*	-0.01	-				
DUAL	0.01	0.01	0.14*	-0.02	-0.04*	0.04*	0.01	-			
IND	-0.04*	0.01	0.05*	0.01	-0.01	-0.02	-0.04*	0.05*	-		
BSIZE	0.05*	-0.04*	0.05*	0.01	0.02	-0.04*	0.07*	-0.09*	0.01	-	
DIRAGE	-0.03*	0.05*	-0.13*	0.04*	0.09*	-0.11*	0.10*	-0.04*	0.01	-0.02	-
CO	0.04*	-0.07*	0.01*	-0.04*	-0.09*	0.05*	-0.03*	0.12*	0.06*	0.07*	-0.13*

**: significant at level of 5%*

Appendix 9. Results of pooled OLS and quantile regression for the model of firm productivity

	TFP					
	OLS	**tau = 0.1**	**tau = 0.25**	**tau = 0.5**	**tau = 0.75**	**tau = 0.9**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
PC	-0.022**	-0.024**	-0.012**	-0.005*	0.004**	0.014*
	(0.014)	(0.019)	(0.009)	(0.009)	(0.013)	(0.019)
FSIZE	0.004	-0.018***	-0.003	-0.001	0.003	0.019***
	(0.004)	(0.006)	(0.003)	(0.003)	(0.004)	(0.006)
LEV	-0.024***	0.011	-0.017***	-0.030***	-0.042***	-0.065***
	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
BLOCK	-0.059	-0.156***	-0.100***	-0.032	-0.007	-0.007
	(0.037)	(0.049)	(0.023)	(0.023)	(0.032)	(0.048)
FCF	0.499***	0.513***	0.402***	0.360***	0.376***	0.369***
	(0.030)	(0.040)	(0.019)	(0.019)	(0.027)	(0.039)
VOLAT	-0.052**	-0.313***	-0.072***	-0.021	-0.021	0.008
	(0.025)	(0.033)	(0.015)	(0.016)	(0.022)	(0.032)
Constant	-0.122	0.369**	0.011	0.040	0.024	-0.286*
	(0.125)	(0.167)	(0.078)	(0.080)	(0.111)	(0.164)
Observations	2,409	2,409	2,409	2,409	2,409	2,409
R^2	0.120					
Adjusted R^2	0.117					

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix 10. Results of FE models (using Robust covariance matrix) and quantile regression for the model of firm profitability

	ROA					
	FE	**tau = 0.1**	**tau = 0.25**	**tau = 0.5**	**tau = 0.75**	**tau = 0.9**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
PC	-0.006**	-0.001***	-0.0002**	-0.002**	-0.006**	-0.0002**
	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)
FSIZE	-0.0005	-0.001**	-0.004***	-0.005***	-0.005***	-0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
LEV	-0.030***	-0.006***	-0.009***	-0.019***	-0.030***	-0.040***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)
BLOCK	-0.019**	-0.010**	-0.017***	-0.020***	-0.021**	-0.032**
	(0.007)	(0.005)	(0.005)	(0.005)	(0.009)	(0.014)
FCF	0.124***	0.051***	0.072***	0.099***	0.117***	0.160***
	(0.006)	(0.004)	(0.004)	(0.004)	(0.007)	(0.011)
VOLAT	-0.035***	-0.055***	-0.055***	-0.050***	-0.036***	-0.012
	(0.005)	(0.003)	(0.003)	(0.004)	(0.006)	(0.009)
Constant		0.072***	0.158***	0.222***	0.267***	0.332***
		(0.016)	(0.016)	(0.017)	(0.028)	(0.045)
Observations	4,207	4,207	4,207	4,207	4,207	4,207
R^2	0.206					
Adjusted R^2	0.202					

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix 11. Results of FE models (using Robust covariance matrix) and quantile regression for the model of firm value

	MB ratio					
	FE	**tau = 0.1**	**tau = 0.25**	**tau = 0.5**	**tau = 0.75**	**tau = 0.9**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
PC	0.013**	0.011**	0.034***	0.050**	0.047	0.080
	(0.047)	(0.011)	(0.011)	(0.020)	(0.034)	(0.084)
GROWTH	0.026	0.012	0.029***	0.110***	0.261***	0.758***
	(0.036)	(0.008)	(0.009)	(0.015)	(0.026)	(0.064)
LEV	0.768***	0.029***	0.016***	0.001	-0.070***	-0.306***
	(0.019)	(0.004)	(0.005)	(0.008)	(0.014)	(0.034)
FSIZE	-0.020	0.020***	0.039***	0.068***	0.125***	0.191***
	(0.014)	(0.003)	(0.003)	(0.006)	(0.010)	(0.025)
BSIZE	0.027***	0.003**	0.001	-0.004	-0.001	-0.001
	(0.007)	(0.001)	(0.001)	(0.003)	(0.004)	(0.011)
DUAL	-0.035	-0.012	0.006	-0.013	-0.038	-0.116
	(0.045)	(0.010)	(0.011)	(0.019)	(0.033)	(0.080)
CO	-0.167***	-0.080***	-0.075***	-0.067***	-0.064	-0.162*
	(0.054)	(0.012)	(0.013)	(0.023)	(0.039)	(0.097)
IND	0.476***	0.041	0.049	0.036	0.250*	0.456
	(0.183)	(0.041)	(0.044)	(0.078)	(0.133)	(0.328)

	MB ratio					
	FE	**tau = 0.1**	**tau = 0.25**	**tau = 0.5**	**tau = 0.75**	**tau = 0.9**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
DIRAGE	0.008**	0.006***	0.007***	0.008***	0.008***	0.014**
	(0.004)	(0.001)	(0.001)	(0.002)	(0.003)	(0.007)
ROA	2.201***	2.990***	3.928***	4.876***	4.623***	2.173***
	(0.131)	(0.030)	(0.031)	(0.056)	(0.095)	(0.235)
Constant		-0.573***	-1.025***	-1.592***	-2.730***	-3.869***
		(0.091)	(0.096)	(0.171)	(0.292)	(0.721)
Observations	5,876	5,876	5,876	5,876	5,876	5,876
R^2	0.251					
Adjusted R^2	0.248					

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix 12. Results of FE models (using Robust covariance matrix) and quantile regression for the model of firm profitability

	Dependent variable:					
	ROE					
	FE	**tau = 0.1**	**tau = 0.25**	**tau = 0.5**	**tau = 0.75**	**tau = 0.9**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
PC	-0.017***	-0.004*	-0.002**	-0.008*	-0.010	0.002*
	(0.005)	(0.004)	(0.004)	(0.005)	(0.007)	(0.013)
FSIZE	0.005***	-0.002	-0.005***	-0.005***	-0.005**	-0.005
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.004)
LEV	-0.021***	-0.009***	-0.005**	-0.004	-0.004	-0.018**
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)	(0.007)
BLOCK	-0.004	-0.014	-0.041***	-0.047***	-0.032*	-0.030
	(0.015)	(0.011)	(0.010)	(0.013)	(0.019)	(0.036)
FCF	0.188***	0.110***	0.149***	0.185***	0.229***	0.233***
	(0.012)	(0.008)	(0.008)	(0.010)	(0.015)	(0.028)
VOLAT	-0.040***	-0.104***	-0.105***	-0.071***	-0.043***	0.005
	(0.010)	(0.007)	(0.007)	(0.009)	(0.013)	(0.024)
Constant		0.106***	0.241***	0.293***	0.340***	0.406***
		(0.034)	(0.034)	(0.042)	(0.062)	(0.117)
Observations	4,207	4,207	4,207	4,207	4,207	4,207
R^2	0.083					
Adjusted R^2	0.077					

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix 13. Results of FE models (using Robust covariance matrix) and quantile regression for the model of firm value

	Tobin's Q					
	FE	**tau = 0.1**	**tau = 0.25**	**tau = 0.5**	**tau = 0.75**	**tau = 0.9**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
PC	0.027***	-0.004**	0.008*	0.009**	0.006	0.047
	(0.020)	(0.012)	(0.007)	(0.007)	(0.014)	(0.037)
GROWTH	0.051***	-0.002	0.019***	0.036***	0.065***	0.224***
	(0.015)	(0.009)	(0.005)	(0.005)	(0.010)	(0.028)
LEV	-0.063***	0.101***	0.075***	0.034***	-0.036***	-0.161***
	(0.008)	(0.005)	(0.003)	(0.003)	(0.005)	(0.015)
FSIZE	0.047***	0.023***	0.027***	0.034***	0.051***	0.055***
	(0.006)	(0.003)	(0.002)	(0.002)	(0.004)	(0.011)
BSIZE	0.016***	0.002*	0.0005	0.0005	-0.001	0.002
	(0.003)	(0.001)	(0.001)	(0.001)	(0.002)	(0.005)
DUAL	-0.026	0.001	-0.014**	-0.016**	-0.025*	-0.062*
	(0.019)	(0.011)	(0.006)	(0.007)	(0.013)	(0.035)
CO	-0.102***	-0.087***	-0.046***	-0.034***	-0.033**	-0.133***
	(0.023)	(0.013)	(0.008)	(0.008)	(0.016)	(0.042)
IND	0.022	0.031	0.024	0.014	0.082	0.203
	(0.077)	(0.045)	(0.026)	(0.028)	(0.053)	(0.143)
DIRAGE	0.008***	0.005***	0.003***	0.004***	0.004***	0.007**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
ROA	0.876***	1.650***	2.049***	2.554***	2.849***	2.056***
	(0.055)	(0.032)	(0.019)	(0.020)	(0.038)	(0.102)
Constant		-0.330***	-0.253***	-0.324***	-0.554***	-0.339
		(0.099)	(0.057)	(0.061)	(0.116)	(0.314)
Observations	5,876	5,876	5,876	5,876	5,876	5,876
R^2	0.087					
Adjusted R^2	0.083					

*Note: *p<0.1; **p<0.05; ***p<0.01*

Appendix 14. Comparison of financial indicators between non-PC firms and PC firms

	Financial ratios	Accuracy	Negative	Positive
Valuation ratios	P/E	78.0%	90.4%	9.6%
	Dividend yield	74.0%	31.3%	68.8%
	EV/EBITDA	82.0%	78.2%	22.8%
Profitability ratios	ROE	68.0%	35.3%	64.7%
	Return on capital employed (ROCE)	88.0%	27.3%	72.7%
	ROA	76.0%	21.1%	79.0%
Liquidity ratios	Cash ratio	68.0%	35.3%	64.7%
	Quick ratio	60.0%	20.0%	80.0%
Efficiency ratios	Days of sales outstanding	68.0%	35.3%	64.7%
	Days of inventory on hand	60.0%	33.3%	66.7%
	Number of days of payables	70.0%	68.7%	32.3%
Leverage ratios	Debt to assets	76.0%	63.2%	36.8%
	Debt to equity	60.0%	60.0%	40.0%
Cost structure	Cost of goods sold/Net revenue	78.0%	64.7%	35.3%
	Selling expenses/Net revenue	76.0%	52.6%	47.4%
	General and Administrative expenses/Net revenue	82.0%	76.9%	23.1%
	Interest expenses/Net revenue	80.0%	54.1%	45.9%
Long-term asset structure	Long-term assets/Total assets	84.0%	61.9%	38.1%
	Fixed assets/Total assets	68.0%	41.2%	58.8%
	Intangible fixed assets/Fixed assets	68.0%	35.3%	64.7%