

Table 2 Summary statistics: the firm's characteristics of 286 firms listed on HOSE from 2010 to 2015.

Variable	Obs	Mean	Std. Dev.	Min	Max
Firm's performance (PER)					
ROA	1593	0.061	0.087	-0.746	0.776
Tobin's Q	1593	1.087	0.616	0.349	7.466
The financial factors					
RDTA	1593	0.047	0.071	-0.002	0.638
CAPEXTA	1593	0.044	0.102	-1.275	0.849
YS	1593	0.118	0.797	-14.329	13.907
BL	1593	0.482	0.220	0.001	0.980
KTA	1593	0.197	0.198	0.000	0.962
SIGMA	1593	0.011	0.005	0.000	0.149
Ln(S)	1593	27.276	1.445	21.266	31.927
Managerial ownership level					
MO	1593	0.183	0.222	0.000	0.997
Return and market condition					
SR	1593	0.003	0.214	-0.632	1.610
IR	1593	0.002	0.132	-0.501	0.373
MR	1593	0.012	0.076	-0.382	0.202
TU	1593	0.220	0.118	0.011	0.397

Source: Author's analysis.

4.1. The determinants of managerial ownership

There is nonlinearities relationship (U-shaped in column 3 and 4) between firm size and optimal managerial ownership level. It implies that larger firm can enjoy the economies scales of monitoring cost or agency cost. However, the larger firm also would be complicated in operation and complex structure organization which results in increasing these costs. The result was advocated by the argument of Himmelberg, Hubbard, and Palia (1999); Do and Wu (2014).

Next, when we consider R&D expenditure, two proxies which are ratio of R&D expenditure to total assets (RDTA) and dummy variable (RDUM) are utilized. RDUM includes in the regression to capture all of observations even firms did not separate and report R&D expenditure in order to get larger and unbiased sample size. The significantly positive coefficient of RDTA indicates the firm in favor of R&D expenditure which leads to the

higher managerial ownership level. In terms of scope for discretionary spending, Gertler and Hubbard (1988) stated that higher ratio R&D expenditure indicated the important role of “soft capital -technology”, which could cause more vulnerable managerial discretion.

Table 3 The determinants of managerial ownership level.

Notes: This table reports result of estimation the optimal level of managerial ownership with the dependent variable being the proportion of share held by board of directors. The regression including year-fixed and industry-fixed also presented. Robust standard error conducted to obtain the efficient estimators. Standard errors are in parentheses. The coefficient of years and industry dummies are not reported. The ***, **, and * mark for 1%, 5%, and 10% level of significance.

VARIABLE	(1)	(2)	(3)	(4)
	YEAR DUMMY	INDUSTRY DUMMY	FE	FE ROBUST
Ln(S)	0.212** (0.083)	0.324*** (0.085)	-0.936*** (0.282)	-0.936*** (0.348)
Ln(S) ²	-0.004** (0.002)	-0.006*** (0.002)	0.018*** (0.005)	0.018*** (0.008)
KTA	-0.011 (0.078)	-0.051 (0.082)	0.135 (0.255)	0.135 (0.246)
KTA ²	-0.003 (0.103)	0.043 (0.107)	-0.149 (0.340)	-0.149 (0.271)
SIGMA	-0.036 (0.030)	0.045 (0.030)	-0.056 (0.086)	-0.056** (0.028)
YS	0.170* (0.095)	-0.095 (0.096)	0.048 (0.319)	0.048 (0.156)
RDTA	0.010* (0.005)	0.012** (0.006)	-0.028 (0.017)	-0.028 (0.013)
RDUM	0.005 (0.034)	-0.005 (0.036)	0.049 (0.105)	0.0485 (0.077)
CAPEXTA	1.700** (0.699)	1.565** (0.722)	-2.073 (2.105)	-2.073 (1.607)
Constant	-2.671** (1.116)	-4.089*** (1.147)	11.740*** (3.761)	11.740*** (4.466)
Observations	1593	1593	1593	1593
Prob > F	0.000	0.055	0.009	0.020
R-square	0.124	0.148	0.035	0.035

Source: Author's analysis

4.2. The movement of actual managerial ownership

The determinants of managerial ownership would use to estimate the optimal MO level in each case. Then, the gap (deficit or surplus) of actual managerial ownership and the optimal level is calculated. This paper investigates the movement of managerial ownership level toward the optimal level which based on the result of estimation in table 3. The agency theory advocated for constructing the optimal level of managerial ownership and the movement toward optimal level.

Table 4 The movement actual managerial ownership level toward to optimal level.

Notes: the gaps (surplus/ deficit) calculated from the different between actual levels and optimal MO levels. The optimal MO obtained from 3 different estimations: (1) fixed effect with robust standard error, (2) regression with controlling year dummies, (3) regression with controlling industry dummies. The actual changes are the variation of percentage of shares held by all managers in this year. Standard errors are in parentheses. The ***, **, and * mark for 1%, 5%, and 10%-level of significance.

VARIABLE	(1)	(2)	(3)
Actual change	-0.023** (0.009)	0.112* (0.055)	-0.014 (0.011)
Constant	-0.007 *** (0.002)	-0.0103*** (0.002)	-0.008*** (0.002)
Observations	1356	1356	1356
Number of id	286	286	286
F- test (p-value)	0.011	0.043	0.081

Source: Author's analysis

The idea to test the movement of actual managerial ownership comes from the research of McConnella, Servaes, and Lins (2008) since they argued that managers or insiders traded stock against changing firm's characteristics. As such, regressions the actual change against the gap are implemented, and all coefficients in 3 regressions are not significantly positive at one-percent level. The result rejects the hypothesis that the managerial ownership adjusts to optimal level of ownership. Cheung and Wei (2006) investigated the difference of optimal and observed level of managerial ownership and their explanation was the survivals of ownership adjustment cost.

4.3. The explanation of the large change (decrease or increase)

The table 5 represents the marginal effect at the average of Probit regression. The dependent variable of column (1) and (2) are large increase (increasing at least one percent) while the dependent ones of two last columns are large decrease (decreasing at least one percent). The significantly positive coefficients of lagged managerial ownership in column (1) and (2) implied that the firms have higher managerial ownership probably would experience an increase which also provides further evidence that actual MO level has not adjust toward the optimal level. In addition, column (3) and (4), the significantly positive coefficients of change in total assets indicate that growing firms likely suffer the reduction in managerial ownership because the manager's properties is insufficient or businesses can access to lower capital cost of capital than managerial ownership.

A considerable point is that the return also impacts on managers' decision in purchasing and selling stocks. There are three levels of profitability ratio are return of stock itself, return of industry and the whole market. Surprisingly, managers tend to increase the rate of their ownership when industry has a better performance even though the whole market goes down and vice versa.

Table 5 Large change in managerial ownership against change in firm's attributes and market condition.

Notes: the Probit regression with random effects (RE) and population-averaged (PA) are presented. Column (1) and (2) of regression with dependent variables are large increase; dependent variables of regression in column (3) and (4) are large decrease.

VARIABLE	(1)	(2)	(3)	(4)
	LARGE INCREASE RE	LARGE INCREASE PA	LARGE DROP RE	LARGE DROP PA
MO _{t-1}	2.009***	1.902***	0.260	0.246
ΔRDTA _t	-1.116	-1.045	-3.240**	-3.060**
RDUM _t	0.275*	0.261*	0.006	0.010
DIVT _t	-0.026	-0.022	0.043	0.044
DIVI _t	0.056	0.0501	-0.045	-0.043
Δln(TA) _t	0.040	0.033	1.262***	1.215***
ΔCAPEXTA _t	-0.535	-0.474	-0.211	-0.204
ΔYS _t	0.155	0.135	-0.023	-0.021
ΔKTA _t	0.684	0.615	0.257	0.247

ΔBL_t	0.316	0.303	-0.817	-0.788
$\Delta SIGMA_t$	5.750	5.395	-4.076	-3.994
SR_t	-0.179	-0.191	0.222	0.211
IR_t	1.265*	1.220*	-1.202**	-1.141**
MR_t	-2.153*	-2.028*	2.074*	1.979*
SR_{t-1}	0.020	0.002	0.381	0.363
IR_{t-1}	-1.421*	-1.317*	-0.623	-0.587
MR_{t-1}	-1.105	-1.060	1.571*	1.484*
TU_t	-0.421	-0.417	-0.728	-0.702
Constant	-1.536***	-1.457***	-0.509***	-0.489***
Observations	1291	1291	1291	1291
Number of id	286	286	286	286

Source: Author's analysis.

4.4. Dynamics relationship of managerial ownership and firm's performance.

Firm's performance: accounting-based measurement

In general, no evidence of lagged change in managerial ownership impacting on ROA was found. While separating sample into positive and negative change, the lagged change in managerial ownership neither impacts on ROA in two mentioned groups. Firm's performance in terms of accounting aspect is not affected directly by the change in ownership structure.

Table 6 **The effect of lagged change in managerial ownership (MO) on change in firm's performance in terms of accounting-based measurement.**

Notes: the short version of model: $\Delta ROA_{i,t} = \alpha + \beta \Delta MO_{i,t-1} + \gamma \Delta X_{i,t-1}$.

This table reports results of the relationship between lagged change in MO and change in ROA. The market condition also includes lagged change in return of specific stock and the change in market liquidity (Turnover Vn-Index). The (1) and (2) regression are all changes. The column (3) and (4) decompose the changes into positive change and negative change group. The two last columns (5) and (6) focused on large change with threshold being one percent. Standard errors are not presented. The ***, **, and * mark for 1%, 5%, and 10% level of significance.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLE						
All lag change in MO	-0.030	-0.027				
Positive change in MO			-0.014	-0.016		
Negative change in MO			-0.012	-0.014		
Large increase					-0.002	-0.001
Large decrease					0.007	0.008
$\Delta \ln(TA)_{t-1}$	0.181	0.211	0.186	0.224*	0.172	0.208
$(\Delta \ln(TA)_{t-1})^2$	-0.015***	-0.016***	-0.015***	-0.016***	-0.014***	-0.015***
ΔKTA_{t-1}	-0.041	-0.038	-0.043	-0.037	-0.039	-0.034
$\Delta \text{SIGMA}_{t-1}$	-0.227	-0.228	-0.238	-0.239	-0.231	-0.233
ΔYS_{t-1}	-0.002	-0.002	-0.003	-0.002	-0.002	-0.001
ΔRDTA_{t-1}	-0.016	0.002	-0.025	-0.003	-0.0196	0.001
RDUM_{t-1}	0.043*	0.040*	0.042*	0.039*	0.0423*	0.041*
$\Delta \text{CAPEXTA}_{t-1}$	0.019	0.017	0.020	0.017	0.018	0.015
ΔTU_t		0.031**		0.033**		0.033**
SR_{t-1}		-0.032***		-0.033***		-0.032***
Constant	-0.037*	-0.034	-0.024	-0.020	-0.039*	-0.037*
Observations	1301	1301	1301	1301	1301	1301
Number of id	285	285	285	285	285	285
R- square (within)	0.060	0.070	0.073	0.069	0.076	0.058
Hausman test (p-value)	0.067	0.029	0.066	0.003	0.050	0.050

Source: Author's analysis.

Firm's performance: market-based measurement.

Generally, in column (1) and (2), the lagged change of managerial ownership in previous period provided negative effect on Tobin's Q even after controlling lagged specific return. Specifically, the negative coefficient (β approximately equals to -0.36) implies that an increase in managerial ownership reduces the investor's assessment of enterprise value. To understand deeply about the impact of the change in managerial ownership on the change in firm's performance, all samples are separated into positive change, no change and negative change group. The regression results are presented in column (3) and (4) which the latter is controlled by market condition. The positive coefficients of negative change (managerial ownership reduction) help us confirm that the decrease in managerial ownership in previous year caused the increase in concurrent Tobin's Q. It could be explained that the reduction of

managerial ownership would convey to outside investors about the better quality of enterprise. Since outside investors may infer that businesses can access external capital resources more easily, and the space for the board of directors conduct detrimental decision to minority shareholders would be narrowed down.

Table 7 The effect of lagged change in managerial ownership (MO) on firm's performance in terms of market-based measurement.

Notes: the short version of model: Δ Tobin's $Q_{i,t} = \alpha + \beta \Delta$ MO $_{i,t-1} + \gamma \Delta$ X $_{i,t-1}$.

The (1) and (2) regression are all changes. The column (3) and (4) decompose the changes into positive change and negative change group. The two last columns (5) and (6) focused on large change with threshold being 1 percent. Hausman test carried out to decide random effect and fixed effect is more appropriate Standard errors are not presented. The ***, **, and * mark for 1%, 5%, and 10% level of significance.

VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)
All lag change in MO	-0.359***	-0.364***				
Positive change in MO			0.068*	0.067*		
Negative change in MO			0.117***	0.118***		
Large increase					-0.017	-0.019
Large decrease					0.056**	0.057**
$\Delta \ln(TA)_{t-1}$	0.070	0.181	0.057	0.170	-0.002	0.111
$(\Delta \ln(TA)_{t-1})^2$	-0.015	-0.017	-0.014	-0.016	-0.013	-0.015
ΔKTA_{t-1}	-0.359	-0.357	-0.375	-0.372	-0.359	-0.356
$\Delta \text{SIGMA}_{t-1}$	-2.298	-2.447	-2.228	-2.378	-2.295	-2.438
ΔYS_{t-1}	-0.082	-0.088	-0.095	-0.101	-0.085	-0.091
ΔRDTA_{t-1}	-1.158***	-1.072***	-1.067***	-0.981**	-1.195***	-1.106***
RDUM_{t-1}	0.027	0.026	0.021	0.021	0.025	0.025
$\Delta \text{CAPEXTA}_{t-1}$	0.253	0.264	0.285	0.295	0.256	0.266
ΔTU_t		0.028		0.027		0.033
SR_{t-1}		-0.137**		-0.140**		-0.138**
Constant	-0.006	-0.009	-0.088**	-0.092**	-0.017	-0.020
Observations	1,301	1,301	1,301	1,301	1,301	1,301
Number of id	285	285	285	285	285	285
R- square (within)	0.020	0.025	0.022	0.040	0.022	0.037
Hausman test (p-value)	0.812	0.3428	0.853	0.440	0.851	0.336

Source: Author's analysis

Moreover, column (5) and (6) focus on the large change with the threshold of change being 1 percent (instead of 2.5 percent in Fahlenbrach and Stulz's study). On average of the large negative change in managerial ownership is about 6.56 percent, so a reduction in MO induces an increase of 0.367 in Tobin's Q. So, the elasticity of Tobin's Q against reduction of managerial ownership is less than 1. All of coefficients of positive change are insignificant, so an increase managerial ownership do not affect the change in Tobin's Q. Regression results also show that firms with higher ratio soft investment will be underestimated by the public because an increase in investment of research and development would be synonymous with higher risk managerial discretion.

5. Conclusion

Firstly, firm's size, and transparency in capital expenditure would impact to the optimal managerial ownership level. Next, actual managerial ownership rate does not adjust towards the optimal ownership level which supported by agency problem. Furthermore, managers properly sell stocks when the entire market performed well in previous years, or firms became mature. Finally, the reduction of managerial ownership level results in an increase in firm's performance (in terms market-based measurement). However, the increase in lagged managerial ownership provides insignificant effect on firm's performance.

Some policy implications for business are withdrawn during the process of operating business. Managers should be more diversified their portfolio by reduced their ownership in the case firms became mature since their bonding motive reduces and their ability are widely recognized. Firms also should provide more transparent information of their soft investment and update the latest reports of the financial institutions, and following strictly management mechanism. In addition, the financial market in Vietnam has not fully developed. Therefore, the transparency of information in a timely manner impacts significantly on investor's decision. As such, the governments and the relevant authorities should enact the guidance which requires businesses notify transparently financial information and disclosure of the percentage of managerial ownership and insider transactions.

The relationship between managerial ownership and firm's performance should be conducted on various aspects of firm's performance such as profitability, market value, grow, and the risk of bankruptcy. Requirement of a new theory to explain the relationship between managerial ownership and firm's performance in the relation of firm lifecycle, as well as

illuminates the reason why the rate of managerial ownership dispersed to the optimal level and the determinants of adjusting portfolio costs.

References

- Do, Q. X., & Wu, X. Z. (2015). Measuring impact of ownership structure and corporate governance on capital structure of vietnamese SOEs. *European Journal of Business and Social Sciences*, 4(8), 218-230.
- Drakos, A. A., & Bekiris, F. V. (2010). Corporate performance, managerial ownership and endogeneity: A simultaneous equation analysis for the Athen stock exchange. *Research in International Business and Finance*, 24(1), 24-38.
- Fahlenbrach, R., & Stulz, R. M. (2009). Managerial ownership dynamics and firm value. *Journal of Financial Economics*, 92(3), 342-361.
- Himmelberg, C. P., Hubbard, G. R., & Palia, D. (1999). Understanding the determinants of managerial ownership and the link between ownership and. *Journal of Financial Economics*, 53(3), 353-384.
- Hirshleifer, D., & Thakor, A. V. (1994). Managerial performance, board of directors and takeover bidding. *Journal of Corporate Finance*, 1(1), 63-90.
- Holderness, C. G., Kroszner, R. S., & Sheehan, D. P. (1999). Were the good old days that good? Changes in managerial stock ownership since The Great Depression. *Journal of Finance*, 1(2), 435-469.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323-329.
- Jenter, D. (2005). Market Timing and Managerial Portfolio Decisions. *Journal of Finance*, 60(4).
- Jiraporn, P., & Liu, Y. (2008). Capital Structure, Staggered Boards, and Firm Value. *Financial Analysts Journal*, 64(1), 49-60.
- Kole, S. R. (1997). The complexity of compensation contracts. *Journal of Financial Economics*, 43(1), 79-104.
- Kristy, J. E., & Diamond, S. Z. (1983). *Finance without Fear*. New York.

- Leland, H. E., & Pyle, D. H. (1977). Informational Asymmetries, Financial Structure, and Financial Intermediation. *The Journal of Finance*, 32(2).
- McConnell, J. J., & Servaes, H. (1990). Additional evidence on equity ownership and corporate value. *Journal of Financial Economics*, 27(2), 595-612.
- Morck, R., Shleifer, A., & Vishny, R. W. (1998). Managerial Ownership and Firm performance: An empirical Analysis. *Journal Financial Economics*, 20, 293-315.
- Nguyen, H. T., & Giang, T. T. (2015). Triangle relationship among ownership structure, dividend policy and firm performance: An empirical study in Vietnamese companies. *Asian Social Science*, 11(27), 195-207.
- Palia, D. (2001). The Endogeneity of Managerial Compensation in Firm Valuation: A Solution. *Review of Financial Studies*, 14(3), 735-764.
- Roberts, M. R., & Whited , T. M. (2013). Endogeneity in Empirical Corporate Finance. *Handbook of the Economics of Finance*, 2, 493-572.
- Ruan, W., Tian, G., & Ma, S. (2011). Managerial ownership, capital structure and firm value: Evidence from China's Civilian run firms. *ustralasian Accounting*, 5(3), 73-92.
- Stulz, R. M. (1988). Managerial control of voting rights: Financing policies and the market for corporate control. *Journal of Financial Economics*, 20, 25-54.
- Stulz, R. M. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics*, 26(1), 3-27.
- Zwiebel, J. (1995). Corporate conservatism and relative compensation. *Journal of Political Economy*, 103(1), 1-25.
- Zwiebel, J. (1996). Dynamic capital structure under managerial entrenchment. *AmericanEconomic Review*, 86, 1197-1215.