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The Impact of Change in CEO Ownership on Future Firm Performance

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Abstract This paper investigates how a change in CEO ownership influences financial performance and market return in the long run. Using an accounting-based framework, we measure financial performance and changes in CEO ownership by using the public firms in the Taiwan Stock Exchange from 1996 to 2018. The findings in CEO ownership are consistent with the convergence-of-interests, entrenchment, and signaling hypotheses in different empirical tests. We find a positive relation between return on assets (ROA) and changes in CEO ownership when the CEO ownership is decreasing. In contrast, ROA is negative significantly associated with CEO ownership when the CEO ownership is increasing. Moreover, we also find that market performance is significantly positively associated with CEO ownership, which is consistent with the signaling hypothesis. Overall, this paper infers that a change in CEO ownership significantly affects future firm performance. Furthermore, investors respond positively to the negative signals released in the stock market. Therefore, the firms have poorer market performance simultaneously.

Keywords: *CEO ownership, convergence of interest, entrenchment, signaling hypothesis*

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1. Introduction

Corporate governance issues result from the separation of ownership (by shareholders) and control (by managers), which explore the form of the relation between firms' performance and managerial ownership, and have been the subject of empirical research. Agency theory predicts that firms are subject to severe agency problems, whereby managers may expropriate wealth from shareholders by taking actions such as insufficient effort, extravagant investment, entrenchment strategies, and self-dealing [1]. Agency costs result from agency problems and result in the poor operating performance. Furthermore, the firm value may fall from the stock price. The agency problem is a fundamental issue in corporate governance, and many studies discuss how to reduce agency problems to improve firm performance and to maximize firm value. Overall, a central tenet of agency theory is that there is potential for mischief when the interests of owners and managers diverge. [2].

The relationship between ownership structure and firm performance has received widespread attention in management and finance research. Empirical findings on the relationship between CEO ownership and firm performance are inconclusive. Previous studies argue the principal-agent relation, as exemplified in the shareholder-manager conflict. Many researchers may explain these investors' behavior. The convergence-of-interest hypothesis demonstrates that when managers own a firm, the firm suffers a lesser extent of agency cost. On the other hand, if the firm is largely owned by individuals who are not in the management team of the firm, then it occurs more cost of monitoring its management. When owners and managers have the same goal in management, then owner-manager interests are converged [3]. Jensen and Meckling [1] argue that managerial ownership can reduce managerial incentives to consume perquisites, expropriate shareholders' wealth, and engage in other non-maximizing behavior and thereby help in aligning the interests between managers and shareholders. Accordingly, the convergence-of-interest hypothesis suggests that a firm's market valuation should rise as its managers have large portion of the firm, which guides managers towards maximizing firm value.

Fama and Jensen [4] and Demsetz [5] have challenged the convergence-of-interest hypothesis. They suggest that managerial ownership may have adverse effects on agency conflicts between managers and shareholders due to the costs of significant managerial ownership. They argue that instead of reducing managerial incentive problems, managerial ownership may entrench the incumbent management team, leading to an increase in managerial opportunism. Harris and Raviv [6] and Stulz [7] argue that an increase in the fraction of voting rights controlled by management decreases the probability of a successful tender offer and increases the premium offered. Depending on whether managerial control of voting rights is small or large, shareholders' wealth increases or falls when management strengthens its power of voting rights. Accordingly, contrary to the convergence of interest hypothesis, the managerial entrenchment hypothesis indicates that giving stock to a manager may translate into

higher voting power, which makes the manager's workplace more secure. Hence, they gain protection against takeover threats and the current managerial market.

From the perspective of the stock markets, Leland and Pyle [8] propose the signaling hypothesis and argue that investors, in the case of asymmetric information, would judge the managerial ownership to decide whether to invest in the company. In labor markets, Morris [9] also analyzes the signaling theory and use it to explain problems of information asymmetry. These signaling hypotheses have indicated questions of corporate dividend policy, capital structure decisions, voluntary disclosure, managerial retention of ownership in new share issues, current value accounting, and voluntary selection of auditors. Signaling theory shows how it reduce information asymmetry when the party with more information signals it to others and is a general phenomenon applicable in any market with information asymmetry. In terms of market performance, the signaling hypothesis argues that investors, in the case of asymmetric information, will judge the managerial ownership to decide whether to invest in the company. The reason is that if the manager's share of the company is higher, the manager will make a better decision to improve the firm's operations, and the value of the firm will increase in the future. The result implies that there is a positive relationship between firm value and managerial ownership.

From the perspective of corporate governance, the ownership structure is a crucial instrument in alleviating agency problems. Previous researchers commonly define the percentage of a firm's shares owned by its top managers and directors as managerial ownership [10]. Jensen and Meckling [1] indicate that managerial ownership is an important corporate governance mechanism used by firms to mitigate agency problems. The concept that the general characteristics of a firm's ownership structure can affect performance has received considerable attention, but few studies have looked at CEO ownership. This paper aims to address the impact of changes in CEO ownership on the long-run firm performance in Taiwan firms, accordingly.

Distinctively from previous research concerning a firm's shares owned by its top managers and directors (managerial ownership), we give special emphasis on a point in CEO ownership. The main contribution of this research is to comprehensively analyze the reaction of the firm performance after changes in CEO ownership in the Taiwan stock market. We organize the remainder of this paper as follows. Section 2 briefly summarizes the relevant literature and develops our research hypotheses. In Section 3 and 4, we describe the methodology and data collection. Section 5 reports the results of the empirical analysis, while Section 6 concludes.

2. Literature Review and Research Hypotheses

2.1. Literature Review

Jensen and Meckling [1] indicate that agency theory focuses internally on the agency costs that arise from the separation of ownership and management and then reduce performance. How to reduce agency costs resulting from agency problems is a crucial major issue in corporate governance, and many studies are discussing how to decrease agency problems to improve firm performance, as well as firm value-maximizing. Past studies suggest that managers with equity in the firm are more likely to embrace the interests of other equity holders and, thus, to direct the firm in their mutual benefits [1,11]. Some related studies find a positive relationship between managerial ownership and firm performance [12,13], or a positive but decreasing relation between managerial ownership and firm performance [14-36]. These empirical results suggest that low levels of managerial ownership have an incentive alignment effect, but at high levels ones induce a risk aversion effect

Jensen and Meckling [1] propose a convergence-of-interest hypothesis that suggests a firm's market valuation should rise as its managerial ownership an increasingly large portion of the firm. Haugen and Senbet [37] indicate that the more managers hold the company's shares, the more the interests of managers and shareholders will be aligned to increase the incentives for managers to work hard for the company, thereby reducing the agency problem between managers and shareholders. Ang, Cole [38] also find that agency costs are indeed higher among firms that are not 100 percent owned by their managers, and these costs increase as the equity share of the owner‐manager declines. Hence, agency costs increase with a reduction in managerial ownership, as predicted by Jensen and Meckling [1]. Palia and Lichtenberg [39] indicate that managerial ownership changes are positively related to changes in productivity. The stock market rewards firms with increases in firm value when these firms increase their level of productivity. This convergence-of-interest hypothesis suggests that firm value increases as managerial ownership rises.

Conversely, Harris and Raviv (1988), Stulz (1988), and others suggest that entrenchment motives may engage managers to increase leverage beyond the optimal point to inflate the voting power of their equity stakes and reduce the possibility of takeover attempts. Fama and Jensen [4] argue that, even for low levels of managerial ownership, market discipline may still force managers to pursue value maximization, despite their lack of personal incentives to do so. In contrast, when a manager owns a substantial fraction of the firm shares, which confers on him enough voting power or influence, he may satisfy his non-value-maximizing objectives without endangering his employment and salary. These arguments give rise to the entrenchment hypothesis, according to which excessive managerial ownership has a rather negative impact on firm performance, probably because a level of managerial ownership that is too high is likely to entrench them. Berger, Ofek [40] study associations between managerial entrenchment and firms' capital structures. They suggesting that entrenched CEOs seek to avoid debt, as well as, leverage levels are lower when CEOs do not face pressure from either ownership and compensation incentives or active monitoring. Furthermore, Fama and Jensen [4] and Jensen and Ruback [41] propose the managerial entrenchment hypothesis indicating that giving ownership to a manager within a company may translate into higher voting power, which makes the manager's

workplace more secure. Hence, they gain protection against takeover threats and the current managerial market.

The signaling hypothesis argues that investors, in the case of asymmetric information, will judge the managerial ownership to decide whether to invest in the company. From the perspective of the stock markets, Leland and Pyle [8] propose the signaling hypothesis arguing that investors, in the case of asymmetric information, will judge the managerial ownership to decide whether to invest in the company. Yang and Su [42] analyze the impact of the incentive effects on the firm's capital structure and default risk. Their empirical results show that firms reduce their debt financing when they grant more stock to their executives. Their finding also indicates that the incentive effects would reduce the default probability directly after controlling the indirect impact of capital structure. This result implies that managerial ownership and equity-based rewards have firm value incentives, which can induce managers to strive to enhance firm value.

2.2. Research Hypotheses

Based on the research of Jensen and Meckling [1], this study believes that CEO's shareholding ratio is higher, they will benefit and suffer from the firm performance. Their interest and rights will be consistent with the firm, so the firm's performance and shareholders' rights and interests will also be improved. On the contrary, the CEO's shareholding ratio is lower, so the firm's performance and shareholders' rights and interests will also decline. Here, this study uses the return on assets (ROA) as operating performance to examine whether the CEO's shareholding ratio will affect the firm's operating performance. The first research hypothesis is as follows.

Hypothesis 1. The changes in CEO ownership affect the performance of the firm's operating performance. If the convergence-of-interest thesis works, the return on assets will have a positive relationship with the changes in CEO ownership.

To examine the managerial entrenchment hypothesis in agency theory, we utilize the researches of Jensen and Ruback [41]. Their findings indicate that an increase in the fraction of voting rights controlled by management decreases the probability of a successful tender offer and increases the premium offered. Hence, we conduct the second research hypothesis is as follows.

Hypothesis 2. The changes in CEO ownership affect the performance of the firm's operating performance. If managerial entrenchment hypothesis works, the return on assets will have a negative relationship with the changes in CEO ownership.

We investigate not only the previous argument with operating performance but also the future firm's return. Based on the research of Leland and Pyle [8], this study uses the return on stock price as a firm's market performance to examine whether the CEO's shareholding ratio will affect the firm's market performance. Accordingly, the third hypothesis designs as follows.

Hypothesis 3. The changes in CEO ownership affect the firm's market performance. The changes in CEO ownership have significant explanatory power for the firm's market performance in the long-run.

3. Methodology and Data Collection

3.1. Sample Selection and Variables

This paper needs to collect the sample firms of CEO ownership in this research. All these samples collected from the Taiwan Economic Journal (TEJ) database. The author gathers a sample covering the period from 1996 to 2017 and traces their returns up to 2018. My sample includes including firms from all industries listed in Taiwan Stock Exchange (TWSE) and Over the Counter (OTC), except for the highly regulated finance, banking, and insurance sectors because of their unique accounting schemes. We collect annual accounting data of firm-specific variables from the TEJ, and therefore a total observation of 754 sample firms meet the previous criteria.

3.2. Relative Measures

3.2.1. Change in Stock Return

The factors of investing return include capital gains and other gains like cash dividends and stock dividends. The definitions of stock return rate (SR) and changes in stock return rate (ΔSR) are as follows:

$$SR_t = \left[\frac{P_t \times (1+\alpha+\beta)+D}{P_{t-1}+\alpha \times C} - 1\right] \times 100\%$$

$$\Delta SR_{t+1} = \left[\frac{\dfrac{P_{t+1} \times (1+\alpha+\beta)+D}{P_t+\alpha \times C} - 1}{\dfrac{P_t \times (1+\alpha+\beta)+D}{P_{t-1}+\alpha \times C} - 1} - 1\right] \times 100\%$$

where P_t is the closing price (index) of the t-th period, α is the subscription rate of current ex-rights, β is the ratio of unpaid allotment of current ex-rights, C is the cash subscription price of current ex-rights, D is the cash dividend paid.

3.2.2. Empirical Models

We perform the multivariate analysis by running the regressions of changes in CEO ownership and the long-run performance of the firms. The regression is as follows.

$$\begin{aligned} ROA_{i,t} &= \alpha + \beta_1 CO_{i,t-1} + \beta_2 SIZE_{i,t-1} \\ &\quad + \beta_3 DR_{i,t-1} + \beta_4 BO_{i,t-1} \\ &\quad + \beta_5 MO_{i,t-1} + \varepsilon_{i,t-1} \end{aligned} \quad (1)$$

where the dependent variable $ROA_{i,t}$ is return on total assets, CO is the CEO ownership of the common stock outstanding of the firm, CO_ALL, CO_DE, and CO_IN denotes all, decreasing, and increasing of CEO ownership of the firm, SIZE is the natural log of the firm's market capitalization, DR is the ratio of long-term debt to total assets, BO is the ownership of Board of Directors, and MO is the managerial ownership.

We also perform the multivariate analysis by running the regressions of changes in CEO ownership and changes in stock return in the long-run. The regression is as follows.

$$\Delta SR_{i,t} = \alpha + \beta_1 CO_{i,t-1} + \beta_2 SIZE_{i,t-1} + \beta_3 DR_{i,t-1} + \beta_4 MB_{i,t-1} + \beta_5 BO_{i,t-1} + \beta_6 MO_{i,t-1} + \varepsilon_{i,t-1} \quad (2)$$

where the dependent variable $\Delta SR_{i,t}$ is the changes in stock return, CO is the CEO ownership of the common stock outstanding of the firm, CO_ALL, CO_DE, and CO_IN denotes all, decreasing, and increasing of CEO ownership of the firm, SIZE is the natural log of the firm's market capitalization, DR is the ratio of long-term debt to total assets, MB is the market-to-book ratio, BO is the ownership of Board of Directors, and MO is the managerial ownership.

4. Empirical Results

This paper summarizes the firm characteristics in Table 1 and Table 2 by ROA and ΔSR. The variables are defined as follows. The asset is the natural log of the firm's total assets. DR is the ratio of long-run debt to total assets. MB ratio is the market-to-book ratio. CO is the CEO ownership of the common stock outstanding of the firm. BO is the ownership of the Board of Directors. MO is the managerial ownership. ROA is the return on total assets. ΔSR is the changes in stock return.

Table 1. Summary statistics for firm characteristics by ROA

Statistics	No. of firms	Mean	Std.	Min	Max
Asset(log)	1,699	9.4036	0.5665	8.0508	12.3633
DR(%)	1,699	40.9403	16.7013	1.27	93.7700
CO(%)	1,699	5.2629	6.9740	0.0100	88.66
BO(%)	1,699	27.7134	16.6181	0.2800	97.1300
MO(%)	1,699	1.4637	2.9621	0.0000	48.1000
ROA(%)	1,699	6.9959	10.3827	-77.2400	82.2800

Table 2. Summary statistics for firm characteristics by ΔSR

Statistics	No. of firms	Mean	Std.	Min	Max
Asset(log)	754	9.7602	0.5553	8.0878	12.3633
DR(%)	754	42.1426	16.1400	1.4600	83.3700
MB	754	1.9840	1.6708	0.1400	16.1200
CO(%)	754	3.8810	5.0905	0.0100	40.3100
BO(%)	754	22.3692	12.7994	0.2800	86.9100
MO(%)	754	1.4637	2.9621	0.0000	48.1000
ΔSR(%)	754	25.9101	85.6013	-82.9652	715.7915

Table 3 and Table 4 indicate the relationship between ROA and changes in CEO ownership in the case of decreasing and increasing of CEO ownership in post-two years. From Table 3, a downward trend of the mean of ROA(%), 7.5659%, 7.2422%, and 6.1268%, is similar to the pattern of CO(%), 6.7528%, 5.8829%, and 4.5618%. The statistical results show that there is a positive relation between ROA and changes in CEO ownership, which is consistent with the convergence-of-interest hypothesis. In contrast to Table 3, a downward trend of the mean of ROA(%), 6.0715%, 5.7566%, and 4.5917%, is diverse for the reverse direction of CO(%), 2.8463%, 3.2450%, and 3.7446%. Table 4 shows that there is a negative relation between ROA and changes in CEO ownership, which is consistent with the managerial entrenchment hypothesis. The author finds distinct results under decreasing and increasing of CEO ownership.

Table 3. Relationship between ROA and changes in CEO ownership under decreasing

Statistics	Year	Mean	Std.	Min	Max
CO(%)	1	6.7528	7.8993	0.0200	88.6600
	2	5.8829	6.8857	0.0100	86.4000
	3	4.5618	5.2224	0.0000	40.3300
ROA(%)	1	7.5659	11.1307	-77.2400	40.3100
	2	7.2422	10.4197	-69.7900	97.1300
	3	6.1268	10.5894	-112.5200	48.1000

Table 4. Relationship between ROA and changes in CEO ownership under increasing

Statistics	Year	Mean	Std.	Min	Max
CO(%)	1	2.8463	4.1138	0.0100	46.1300
	2	3.2450	4.6632	0.0200	47.3500
	3	3.7446	5.1958	0.0300	47.3800
ROA(%)	1	6.0715	8.9703	-50.4900	47.3400
	2	5.7566	9.0763	-49.6800	57.4900
	3	4.5917	9.2260	-61.9700	36.1500

Table 5 and Table 6 indicate the relationship between changes in stock return and changes in CEO ownership also in the case of decreasing and increasing of CEO ownership in post-two years. From Table 5, a downward trend of the mean of ΔSR(%), 28.3693%, 29.3533%, and 15.1020%, is similar to the pattern of CO(%), 5.0053%, 4.4698%, and 3.5011%. The statistical results show that there is a positive relation between ΔSR and changes in CEO ownership, which is consistent with the signaling hypothesis. In contrast to Table 6, we find no relationships between ΔSR and changes in CEO ownership.

Table 5. Relationship between changes in stock return and changes in CEO ownership under decreasing

Statistics	Year	Mean	Std.	Min	Max
CO(%)	1	5.0053	5.7057	0.0200	40.3100
	2	4.4698	5.3041	0.0100	40.2400
	3	3.5011	4.5898	0.0000	40.1700
ΔSR(%)	1	28.3693	95.7204	-82.9652	715.7915
	2	29.3533	94.7074	-88.5052	821.4283
	3	15.1020	64.5000	-87.5416	353.1251

Table 6. Relationship between changes in stock return and changes in CEO ownership under increasing

Statistics	Year	Mean	Std.	Min	Max
CO(%)	1	2.4128	3.6737	0.0100	23.8100
	2	2.7213	4.0451	0.0200	29.8600
	3	3.1336	4.5294	0.0300	30.8300
ΔSR(%)	1	22.6990	70.2437	-81.6666	316.1086
	2	13.2003	67.7466	-92.6872	404.2093
	3	13.9734	78.3993	-82.6884	675.8599

There are two parts to the empirical analysis in this study. First is the basic summary statistics for firm performance and CEO ownership. We summarize these characteristics under decreasing and increasing of CEO ownership. In the univariate analysis, we expect to observe the basic statistics of these two measures and check the systematic pattern of these two measures. Second, we perform the multivariate analysis by running

the regressions of changes in CEO ownership and the long-run performance of the firms. The regression result is summarized in Table 7 for ROA and Table 8 for ΔSR. The numbers in parentheses are robust p-values. ***, **, * represent the significance under 1%, 5%, 10% level respectively.

$$ROA_{i,t} = \alpha + \beta_1 CO_{i,t-1} + \beta_2 SIZE_{i,t-1} + \beta_3 DR_{i,t-1} + \beta_4 BO_{i,t-1} + \beta_5 MO_{i,t-1} + \varepsilon_{i,t-1} \quad (1)$$

where the dependent variable $ROA_{i,t}$ is the return on total assets, CO is the CEO ownership of the common stock outstanding of the firm, CO_ALL, CO_DE, and CO_IN denotes all, decreasing, and increasing of CEO ownership of the firm, SIZE is the natural log of the firm's market capitalization, DR is the ratio of long-term debt to total assets, BO is the ownership of Board of Directors, and MO is the managerial ownership.

$$\Delta SR_{i,t} = \alpha + \beta_1 CO_{i,t-1} + \beta_2 SIZE_{i,t-1} + \beta_3 DR_{i,t-1} + \beta_4 MB_{i,t-1} + \beta_5 BO_{i,t-1} + \beta_6 MO_{i,t-1} + \varepsilon_{i,t-1} \quad (2)$$

where the dependent variable $\Delta SR_{i,t}$ is the changes in stock return, CO is the CEO ownership of the common stock outstanding of the firm, CO_ALL, CO_DE, and CO_IN denotes all, decreasing, and increasing of CEO ownership of the firm, SIZE is the natural log of the firm's market capitalization, DR is the ratio of long-term debt to total assets, MB is the market-to-book ratio, BO is the ownership of Board of Directors, and MO is the managerial ownership.

Table 7. The impact of changes in CEO ownership on ROA

VARIABLES	ROA		
	Model 1-1	Model 1-2	Model 1-3
CO_ALL	0.01		
	(0.038)		
CO_DE		0.067	
		(0.044)	
CO_IN			-0.380***
			(0.086)
SIZE	0.957**	1.067	0.713
	(0.475)	(0.658)	(0.662)
DR	-0.078***	-0.089***	-0.058**
	(0.015)	(0.019)	(0.023)
HDTR	0.109***	0.067***	0.133***
	(0.016)	(0.021)	(0.023)
HMGR	0.152*	0.149	0.075
	(0.080)	(0.092)	(0.181)
Constant	-2.409	8.272***	-0.878
	(4.511)	(1.030)	(6.260)
Observations	1,698	1,050	648
R-squared	0.041	0.038	0.076
Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.			

Table 7 shows the empirical results that CEO ownership affects the firm's operating performance. In model 1-3, we find that the coefficient CEO ownership is -0.380, and CEO ownership has a significant impact on ROA. The result implies CEO ownership has a negative and significant effect on the firm's operating performance, which is consistent with the managerial entrenchment hypothesis proposed by Jensen and Ruback [41]. We infer that the ratio of CEO ownership increases; the business decision is unfavorable to the CEO, and beneficial to the company may be excluded based on self-interest reasons. This condition may lead to agency problems and reduce the firm's operating performance, which finally results in firm losses.

In contrast, in models 1-1 and 1-2, we find that there is no significant relationship between the firm's operating performance and changes in CEO ownership. These results of model 1 are consistent with the managerial entrenchment hypothesis for hypothesis 2 in this paper. There is a negative relationship between ROA and CEO ownership.

Table 8. The impact of changes in CEO ownership on changes in stock return

VARIABLES	ΔSR		
	Model 2-1	Model 2-2	Model 2-3
HGM_ALL	2.684		
	(4.661)		
HGM_DE		-0.434**	
		(0.180)	
HGM_IN			10.93
			(14.644)
SIZE	-4.648	-0.598	-20.558
	(44.091)	(1.927)	(101.344)
DR	2.272	-0.065	5.01
	(1.467)	(0.064)	(3.405)
MB	7.242	0.14	18.708
	(13.625)	(0.568)	(33.719)
HDTR	0.981	0.064	2.201
	(1.837)	(0.079)	(4.246)
HMGR	-5.792	0.253	-28.768
	(10.233)	(0.378)	(31.984)
Constant	-111.26	7.082	-121.633
	(431.569)	(18.929)	(987.556)
Observations	753	427	326
R-squared	0.005	0.016	0.012
Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.			

From Table 8, in model 2-2, we find that the coefficient CEO ownership is -0.434, and the test is also significant. The results imply that the firm's stock return decreases significantly simultaneously when CEO ownership decreases, which is consistent with the expectation of Hypothesis 3. In contrast, in models 2-1 and 2-3, we find no significant relationship between the firm's stock return and changes in CEO ownership. The results imply that investors respond positively to the negative signals released in the stock market under the CEO's shareholding decreased, so the company's market performance fell simultaneously.

5. Conclusions

Agency theory predicts that firms are subject to severe agency problems, whereby managers may expropriate

wealth from shareholders by taking actions such as insufficient effort, extravagant investment, entrenchment strategies, and self-dealing. Agency costs result from agency problems and result in the declined operating performance. This paper investigates how a change in CEO ownership influences financial performance and market return in the long run.

In this study, we analyze two questions about the interaction between firm performance and changes in CEO ownership in the long-run in the Taiwan stock market. First, we test how a change in CEO ownership affects the firm's operating performance in the long-run. The empirical evidence shows that positive relations between return on assets (ROA) and changes in CEO ownership under CEO ownership decreased, consistent with convergence of interest hypothesis. On the other side, the finding also indicates that ROA is negative significantly associated with an increase in CEO ownership, consistent with the entrenchment hypothesis.

Second, we test how a change in CEO ownership affects the market performance in the long-run. We find that the firm's stock return is positive significantly associated with a decrease in CEO ownership, consistent with the signaling hypothesis. However, the author finds no evidence that there is a relation between market return and an increase in CEO ownership.

Overall, this paper infers that the CEO increases shareholding of the firm leads to agency problems, therefore, resulting in reducing the firm's performance. Furthermore, investors respond positively to the negative signals released in the stock market under the CEO's shareholding decreased, so the company's market performance fell simultaneously. Despite our findings in the Taiwan markets, we also concern a further question of whether the results concerning Taiwan may extendable to other markets? This argument leaves room for further research.

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