

國立臺灣大學管理學院會計學研究所

碩士論文

Graduate Institute of Accounting

College of Management

National Taiwan University

Master Thesis



台灣上市櫃公司高階經理人薪酬與績效連結性：

薪酬委員會之影響

Top Management Pay-to-performance Relation:

The Effect of Compensation Committee

陳立榕

Chen, Li-Rong

指導教授：林嬋娟 博士

Advisor: Lin, Chan-Jane, Ph.D.

中華民國 103 年 1 月

January, 2014

誌謝

轉眼間就到了 2014 年的 1 月，回想寫論文的過程有如昨日歷歷在目。完成學術論文真不是一件輕而易舉的事，從論文题目的尋找、研究設計及最後撰寫論文，每個環節都需要投入很多心力，而能順利完成論文真的要感謝非常師長、朋友及家人的支持與協助。首先，要感謝指導老師 林嬋娟教授。老師嚴謹的研究態度，讓我由衷敬佩同時亦以老師作為楷模，力求完成一篇具有品質的論文。除了學術研究的部分，老師平時也很關心學生的生活，讓作為學生的我備感溫馨。其次，感謝口試委員台北大學 林孝倫老師及 郭俐君老師。感謝林老師及郭老師口試時給予很多建設性的意見，使我的學術論文可以更加完善，衷心感謝口試委員老師的用心。

在漫長論文寫作的路上，有許多同學同事及朋友的協助，使我順利度過一切困難。首要，感謝研究所好友---陳苡晟同學。陳苡晟同學花很多時間及心力與我討論論文研究設計或寫作細節，是協助我完成這份論文的一大功臣，真的萬分感謝陳同學的鼎力相助。同時也感謝姑姑友人---David 在英文論文寫作方面的協助，使我的文字表達更為通順，衷心感謝。另外，直屬學長---陳昱良，常常長途奔波只為來研究室與我討論論文，給予我很大的安定感。同時也感謝 Kevin，這一路上陪伴我度過很多低潮，萬分感謝。還有很多好朋友與同學、同事，研究所的同學們昱丹、宜萱、崇傑、奕銘、旭昇、珮華、啟宏、彥凱、家桓、孟璇、宜靜、壬輔等，學長姐嵐芯學弟妹聖歲、喬郁、聖樺、佳珣、翔駿、振宇、家楷等，同事惠如、瑩茹、欣穎、君玉、威廷、宗穎、柏瀚，好友瑜姚、昕于、馨筑等，感謝你們的陪伴，使我在論文寫作路上不孤獨。

最後，要感謝家人的支持與協助，爺爺、奶奶、爸爸、媽媽、哥哥、妹妹、弟弟還有姑姑們。有你們的支持，我才有動力完成這份學術論文，衷心感謝你們，這份榮耀歸於所有家人。

陳立榕 謹識

於台大會計研究所

民國 103 年 1 月

中文摘要



為抑制薪酬與公司績效背離之問題，主管機關規定台灣上市及上櫃公司應於2011 年底前設置薪資報酬委員會。本篇研究探討薪酬委員會是否提高高階經理人薪酬與公司績效之連結，而此薪酬與績效連結性是否亦受到薪酬委員會之組成影響。以2010 年至2012 年上市及上櫃公司為樣本，本研究雖無發現薪酬委員會有提高高階經理人薪酬與公司績效之連結的效果，惟本研究驗證了薪酬委員會之組成對薪資與績效之連結性具有顯著的影響。在薪酬委員會獨立性之方面，獨立董事參與薪酬委員會可增加績效佳公司中報酬與績效之連結性，故本研究認為，增加獨立董事參與薪酬委員會，為一提升薪酬績效連結性之途徑。另外，多重董事身分之董事參與薪酬委員會可使薪酬與績效之連結性顯著增加，此結果應證先前研究對多重董事身分董事會將經驗帶進董事會/委員會，並積極參與董事會/委員會事務，對董事會/委員會產生正面影響之證據相符。

關鍵字：公司治理、薪資報酬委員會、高階經理人薪酬、薪酬與績效連結性。

ABSTRACT



Compensation committee is introduced in Taiwanese firms in 2011 for addressing the problem of insensitive compensation. I examine whether mandatory compensation committee increases pay-to-performance relation and whether composition of committee affects pay-performance relation. Using 4,005 firm-years of TSE and GTSM listed firms from 2010 to 2012, I find no significant evidence that compensation committee can improve pay-to-performance relation. But the further test indicates that composition of committee affects pay-to-performance relation. The presence of independent director on compensation committee increases pay-to-performance relation in firms with favorable performance. The result suggests that setting independent directors on committee may be a solution to increase pay-to-performance relation. On the other side, the analysis also indicates that the presence of director with multiple directorships increases pay-to-performance relation. The finding of positive effect of director with multiple directorships supports previous research which stated that director with multiple directorships would bring their experience to board/committee and be more active in participating in board/committee meeting.

Keywords: Corporate Governance; Compensation Committee; Top Management Compensation; Pay-to-performance Relation.

Index



1. Introduction	1
2. Literature Review and Hypothesis Development	6
2.1. Compensation and Performance	6
2.2. Compensation Committee and Compensation	9
2.2.1. Independence of Compensation Committee	11
2.2.2. Board Overlapping	14
2.2.3. Committee Overlapping	17
3. Research Design	20
3.1. Sources and Sample	20
3.2. Research Design and Empirical Model	22
3.3. Variables Measurement	25
3.3.1. Top Managements Cash Compensation: Dependent Variable	25
3.3.2. Compensation Committee Variable	26
3.3.3. Control Variables	29
4. Descriptive Statistics and Empirical Results	34
4.1. Descriptive Statistics and Other Analyses	34
4.2. Empirical Results	47
5. Additional Analyses	53
6. Conclusions, Contribution, and Limitations	78
6.1. Conclusions	78
6.2. Contribution	79
6.3. Limitations	80
References	82

Lists of Tables



Table 1. Sampling Process.....	21
Table 2. Definitions of Variables.....	33
Table 3. Descriptive Statistics and Other Information of Model 1 in 2010 & 2011.....	36
Table 4. Descriptive Statistics and Other Information of Model 1 in 2010 & 2012.....	40
Table 5. Descriptive Statistics and Other Information of Model 2.....	44
Table 6. Regression Results of Model 1 in 2010 & 2011.....	48
Table 7. Regression Results of Model 1 in 2010 & 2012.....	49
Table 8. Regression Results of Model 2.....	52
Table 9. Descriptive Statistics of Additional Analysis 1 in 2010 & 2011.....	55
Table 10. Descriptive Statistics of Additional Analysis 1 in 2010 & 2012.....	58
Table 11. Descriptive Statistics of Additional Analysis 2.....	61
Table 12. Regression Results of Additional Analysis 1 in 2010 & 2011.....	56
Table 13. Regression Results of Additional Analysis 1 in 2010 & 2012.....	59
Table 14. Regression Results of Additional Analysis 2.....	62
Table 15. Sampling Process of Additional Analysis for Cash Bonus.....	64
Table 16. Descriptive Statistics of Additional analysis 3-1 & 4-1.....	66
Table 17. Descriptive Statistics of Additional analysis 3-2 & 4-2.....	70
Table 18. Descriptive Statistics of Additional Analysis 5 & 6.....	74
Table 19. Regression Results of Additional Analysis 3-1.....	67
Table 20. Regression Results of Additional Analysis 3-2.....	71
Table 21. Regression Results of Additional Analysis 4-1.....	68
Table 22. Regression Results of Additional Analysis 4-2.....	72
Table 23. Regression Results of Additional Analysis 5.....	75
Table 24. Regression Results of Additional Analysis 6.....	76
Figure 1. Frame of models.....	53

1. Introduction

Insensitivity between compensation and performance has emerged as a controversial issue recently. The problem was urgent especially in the company which experienced dramatic loss. For example, the Troubled Asset Relief Program (TARP) gave \$170 billion American International Group (AIG) for solving its risk of collapse. But in the AIG 2009 disclosure, the employees in financial products division which lost \$40.5 million in 2008 received \$1 million or more as a bonus (Kat 2009). The compensation decision revealed the destruction of pay-to-performance relation, and moreover, led to profound reflection to the current mechanism of monitoring compensation level.

The main mechanism of determining appropriate compensation policy is the compensation committee, a sub-committee under the board. Williamson (1985) highlighted the importance of the compensation committee and stated that unless independent compensation committee exists, managements would write their compensation policy with one hand and sign them with the other. The history of the compensation committee in United State can be traced back to 1978 when the SEC introduced the reporting requirement that proxy statement should contain details of the subcommittee. Even though introducing committees would take companies some resource, the benefit would be far more than the cost. For example, in the short term, firms would earn the reputation for good corporate governance; in long term, compensation committee can monitor the compensation policy to improve shareholders' benefit. Hence, although firms are not compelled to introduce

compensation committee in that time, most of firms set compensation committee on board.¹



The composition of effective compensation committee has attracted attention of legislators and academics. For example, the 1992 SEC proxy statement disclosure requirement regulated that all companies should disclose the detailed information on compensation, performance, and compensation committee in the annual report.² Furthermore, Internal Revenue Service adopted amendments to the tax deduction limitation of compensation. It regulated that tax deductions for compensation in excess of 1 million is not allowed, unless it is performance-based compensation and the goals of the compensation are determined by compensation committee composed solely by outsiders.

Numerous research have examined the effect of composition of the compensation committee. Daily, Johnson, Ellstrand, and Dalton (1998), Conyon and Peck (1998), and Newman and Mozes (1999) examined the effect of committee independence; Sun and Cahan (2009), Laux and Laux (2009), and Liao and Hsu (2013) examined the effect of common membership between boards or committees. However, compared to the well-established compensation committee system in the

1 In recent years, compensation committees are turned to be compulsorily set on board in some listed firms. For example, firms which are listed on NYSE and Nasdaq are required to have compensation committee on board.

2 Besides the cash compensation, information of equity-based compensation and stock return for last five years should be disclosed. Compensation policy, special decision, and committee composition information are also required to be disclosed in the Compensation Committee Report.

U.S., the compensation committee was introduced in Taiwan only recently.

Even though bad performance company with high pay would be disclosed on the website of Taiwan Stock Exchange Corporation (TWSE), the problem of compensation insensitivity still exists in Taiwanese firms.³ Therefore, compensation committee is suggested to introduce as a mechanism for improving pay-to-performance relation and strengthening corporate governance. Securities Exchange Act 14-6 regulates that all Taiwan listed firms should establish compensation committee before 2012 and disclose all details of composition and operation in the annual reports. And “Regulations Governing the Appointment and Exercise of Powers by the Remuneration Committee of a Company Whose Stock is Listed on the Stock Exchange or Traded Over the Counter” regulates that compensation committee must be composed by at least three members who are (i) experts in business, law, finance, or accounting⁴ and (ii) outsiders of company.⁵

3 As Taiwan Stock Exchange Corporation reported in 2010, 98 listed firms which experience loss in the last two years paid directors with higher compensation.

4 A remuneration committee member shall meet one of the following professional qualification requirements, together with at least 5 years work experience:

- (1) An instructor or higher in a department of commerce, law, finance, accounting, or other academic department related to the business needs of the company in a public or private junior college, college, or university;
- (2) A judge, public prosecutor, attorney, certified public accountant, or other professional or technical specialist who has passed a national examination and been awarded a certificate in a profession necessary for the business of the company.
- (3) Have work experience in the area of commerce, law, finance, or accounting, or otherwise necessary for the business of the company.


⁵ During the 2 years before being appointed or during the term of office, a remuneration committee

Even so, the legislation did not regulate that compensation committee should be composed solely of independent directors as audit committee should. And the lack of regulation of committee independence is argued in local studies as a flaw (Dai 2011; Teng and Lee 2012; Liao 2013). However, little research provides empirical evidence of the effectiveness of mandatory compensation committee in Taiwanese firms.

The purpose of my study is to provide empirical evidence of the effect of mandatory compensation committee on relation between top management

member shall not have been or be any of the following:

- (1) An employee of the company or any of its affiliates.
- (2) A director or supervisor of the company or any of its affiliates. The same does not apply, however, in cases where the person is an independent director of the company, its parent company, or any subsidiary in which the company holds, directly or indirectly, more than 50 percent of the voting shares.
- (3) A natural-person shareholder who holds shares, together with those held by the person's spouse, minor children, or held by the person under any other's name, in an aggregate amount of 1 percent or more of the total number of issued shares of the company or ranking in the top 10 in shareholding.
- (4) A spouse, relative within the second degree of kinship, or lineal relative within the third degree of kinship, of any of the persons in the preceding three subparagraphs.
- (5) A director, supervisor, or employee of a corporate shareholder that directly holds 5 percent or more of the total number of issued shares of the company or ranks in the top 5 in shareholding.
- (6) A director, supervisor, managerial officer, or shareholder holding 5 percent or more of the shares, of a specified company or institution that has a financial or business relationship with the company.
- (7) A professional individual who, or an owner, partner, director, supervisor, or managerial officer of a sole proprietorship, partnership, company, or institution that, provides commercial, legal, financial, or accounting services or consultation to the company or to any affiliate of the company, or a spouse thereof.



compensation and accounting performance in Taiwanese firms. By analyzing 4,005 firm-years from firms listed on Taiwan Stock Exchange (TSE) and GreTai Securities Market (GTSM) from 2010 to 2012, this study tries to answer two principal research questions: (1) Does compensation committee increase pay-to-performance relation? (2) Does the composition of compensation committee affect pay-to-performance relation? The result indicates that there is no evidence that compensation committee improves pay-to-performance relation after controlling for standard determinants of the level of top management compensation (e.g., proxies for the firm performance, ownership structure, and firm size). However, with respect to the committee composition, I find that top management compensation sensitivity is higher when more directors with multiple directorships serve on compensation committee. Although no evidence shows that the compensation sensitivity is associated to the presence of independent director or audit committee member in all firms, I find that the presence of independent director in compensation committee increases compensation sensitivity in firms with favorable performance.

The remainder of this study is organized as follows. Section 2 provides a comprehensive review of the literature of compensation sensitivity and compensation committee and the hypothesis of this paper. The detail of research method, data selection, and variable measurement are included in Section 3. Section 4 and 5 are the empirical results and the additional tests. Finally, Section 6 consists of the conclusion, the research limitation, and the contribution of this study.

2. Literatures Review and Hypotheses Development

As Jensen and Meckling (1976) demonstrated, the agency problem exists in the relation between shareholders (the principle) and managements (the agent) due to the separation of ownership and control. They stated that shareholders would bear amount of agency cost if an opportunistic management have self-serving behavior. In order to constrain the divergence, they suggested that firm should establish incentive policy and introduce monitor mechanism. Consequently, it raises attention to deal with agency problem and therefore corporate governance has emerged as an issue of considerable academic and policy importance.

To address agency problem, compensation which is related to managements' own benefit is a direct and effective corporate governance mechanism. According to suggestion of Jensen and Meckling (1976), linkage of pay to performance in compensation contract and introduction of the compensation committee are practices for minimizing agency cost. The incentive pay provides managements with the opportunity to gain more resources; the compensation committee enhances the appropriate compensation decision. Accordingly, the following sections are the review of the literatures of pay to performance relation and research about the effect of the compensation committee on compensation.

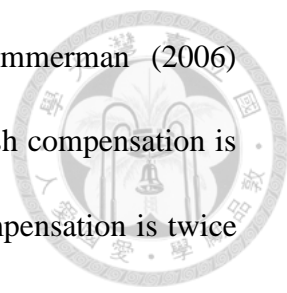
2.1. Compensation and Performance

Considerable research have examined the association between compensation and performance. The objective of these studies is to investigate how sensitive the management compensation is to performance measurement. For example, Murphy

(1985) examined the relationship between pay and performance in Fortune 500 firms in order to contradict the argument that performance plays a minor role in determining compensation. Through observations of individual executives over time and individual career lifecycle in different occupations, Murphy's study demonstrated that all compensation components, except option, are significantly positive related to firm stock performance and growth of sale. Stock option, the exception, is more granted to managements when firm experience unfavorable stock performance.

Coughlan and Schmidt (1985) provided partly different evidence to Murphy. They examined whether performance motivates the control mechanisms, management compensation and turnover. They found that cash compensation of CEO is related to market performance if the CEO is younger than 64 and not in his/her initial or final year, but cash compensation is not statistically related to accounting performance. The result is different from research of Murphy (1985), which suggests compensation component is positively related to firm performance. And they attributed the different results to the factor that samples in the initial and final year are excluded in their research.

Jensen and Murphy (1990) investigated the magnitude of all compensation components to motivate managements, and showed the evidence of equity-based compensation in addition to cash compensation. The finding indicated that both cash compensation and equity-based compensation are statistically related to shareholders' wealth. And in all the compensation components, the equity-based compensation has the highest sensitivity, increasing for 14.5 cent to 1,000 dollars in shareholder wealth.



With respect to cash compensation, Leone, Wu, and Zimmerman (2006) provided evidence to support not only the hypothesis that CEO cash compensation is related to accounting performance but also the hypothesis that compensation is twice sensitive to negative stock return than positive stock return. The result indicated that boards of directors are aggressive to exercise discretion in cash pay to reduce *ex post* settling up cost.

Additionally, Lin (2005) and Lee and Chen (2011) examined the association between CEO compensation and corporate governance determinants in Taiwanese firms. They used performance as control variable, and they found that CEO cash compensation is significantly related to accounting performance. The evidence supports the existence of pay-to-performance relation in Taiwanese firms.

There are also some studies which emphasize on the performance measurement in pay-to-performance relation. The research of Lambert and Larcker (1987) empirically examined the weight of market or accounting performance in determining cash compensation by analytical method. They established compensation function to support the linear relation between compensation and both accounting and market performance, and concluded that compensation policy would put more emphasis on accounting or stock performance measurement, depending on the relative variance of those performance measurements, degree of growth, and CEO ownership. Therefore, proper compensation level can be estimated through this function as a benchmark to examine the existence of excess pay to managers.

In addition, Sloan (1993) tried to provide evidence of the importance of

accounting performance in determining compensation. Sloan's study showed that the earning-based compensation can shield managements' wealth from fluctuation of the market. Thus, even though accounting performance measurement is suggested to be replaced with market performance measurement since it could be manipulated by managements. This research suggested that accounting performance measurement is still an appropriate measurement for compensation.

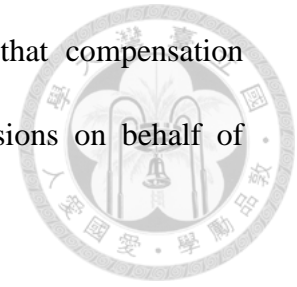
In summary, pay-to-performance relation is supported in the literature, and further evidence of weight of performance measurements in determining different compensation components is also presented. However, appropriate compensation which both motivates management and promotes the shareholders' benefit is determined by compensation committee. Studies have tried to find how existence and composition of compensation committees affect pay-to-performance relation.

2.2. Compensation Committee and Compensation

As mentioned in the prior paragraph, Jensen and Meckling (1976) suggested that monitoring mechanism is also needed in order to address agency problems. Undoubtedly, compensation committee which is delegated to determine appropriate compensation policy plays a major role in monitoring compensation. Dechow, Huson, and Sloan (1994) provided evidence of compensation committee effectiveness by examining relation between executive compensation and restructuring expenditure.⁶ They found that compensation committee would adjust top executives' cash

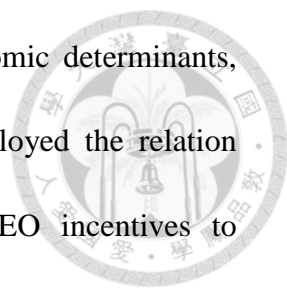
⁶ Restructuring brings long-term benefit to firm but decreases profitability of firm and moreover incentive pay of executives. Thus, executives would tend not to restructure for higher pay.

compensation for restructuring charge. The evidence supports that compensation committee is effective in encouraging executives to make decisions on behalf of shareholders rather than only for interests of themselves.



However, some studies provided different evidence of the compensation committee effectiveness. For example, Main and Johnston (1993) examined the effect of compensation committee on board of British companies which began to establish compensation committee in 1992. They found no evidence that compensation committees tailor top managements' pay and the committees can be viewed as an extension of corporate governance. Ezzamel and Waston (1998) investigated whether compensation committee would pay executive bidding-up compensation through U.K. companies in 1992. They found that compensation committee would increase compensation level when managements are underpaid but would not decrease compensation level when overpaid. In addition, Chalevas (2011) provided evidence of compensation committee in firms of Greece. The existence of compensation committee was employed as a control variable in their analysis. And they found that executive compensation is not significantly related to the existence of compensation committee in companies of Greece.

Moreover, the problem of relation between pay for committee members and pay for CEO is highlighted in some prior studies. O'Reilly, Main, and Crystal (1988) tried to explain CEO compensation level through standard economic determinants, tournament model, and social comparison theory. They found that CEO compensation is strongly related to compensation of outsiders of the board, especially those who



serve on compensation committee, instead of the standard economic determinants, such as firm size and profitability. Conyon and He (2004) employed the relation between compensation committee, CEO compensation, and CEO incentives to examine the three-tier optimal contracting model and the managerial power model. They found no evidence that compensation committees have positive effect on compensation decision. But they found that the compensation of compensation committee members is positively related to that of executives.

Despite that previous studies have indicated that compensation committee is not effective in controlling compensation, mandatory compensation committee in Taiwan is established to solve the problem of insensitive compensation as the legislation implication. Hence, this study proposes the following hypothesis:

H1. Companies with compensation committee on board will have a stronger link between their top managers' pay and accounting performance than other companies.

2.2.1 Independence of Compensation Committee

The independence of committee is the primarily discussed and mostly concerned issue about the composition of the compensation committee. The effect of the independence of committee on the compensation decision was been widely discussed especially after the regulation reform for additional disclosure requirement in 1992 and tax deduction limit in 1993.⁷ Newman and Mozes (1999) examined whether the

⁷ As discussed in Section 1, SEC regulated that companies should disclose the detailed information

compensation committee would make CEO-favoring compensation decision when insiders participate in the committee through data in 1991 (before regulation) and 1992 (after regulation) of the 161 firms which are listed on the 1992 *FORTUNE* 250.

They found that the participation of insiders would not affect CEO total compensation. But in the further research, the evidence indicated that CEO compensation would be higher in insider-influenced firm than non-insider-influenced firm during period of unfavorable stock performance, because insiders would compensate CEO for loss of stock option by granting more options to keep the compensation level. Due to the CEO-serving decision of insiders, they conclude the independence of the committee is positively related to committee quality.⁸

Vafeas (2003) examined the relation between the participation of insiders in the compensation committee and CEO compensation and further the effectiveness of the regulation reforms in long-term period through observations from 1991 to 1997. The result presented that the membership of insiders would statistically positively related to non-contingent pay and the sensitivity of non-contingent pay to stock return increases after the reform.

on compensation, performance, and compensation committee in the annual report. IRS adopted amendments that tax deductions for compensation in excess of 1 million is not allowed, unless it is performance-based compensation which is determined by compensation committee composed solely by outsiders.

⁸ Newman and Mozes reminded that the effect of insiders on compensation is not found in analysis of all firms because it biased when the firms with unfavorable performance are minority of the whole samples. The comment inspired the further examination of firm with favorable performance and firm with unfavorable performance respectively in this paper.

Canyon and Peck (1998) also found the positive effect of the independence of committee on committee quality by examining the relation between board control, compensation committee, and top management compensation in U.K. companies. They showed the evidence that the presence of outsiders on compensation committee leads to higher pay-to-performance association.

Comparatively, some research have provided the different evidence of the relation between compensation and independence of committee or board (Core, Holthausen and Larcker 1999; Anderson and Bizjak 2003; Chalevas 2011; Sun and Cahan 2009; Bolye and Roberts 2012). Core et al. (1999) investigated the effect of corporate governance on CEO compensation and the effect of excess compensation on further performance. After examining all determinants of corporate governance, they found that higher proportion of outsiders on board contributes to a higher level of compensation. But the CEO appointed outside director and gray directors may increase CEO compensation. The participation of outsiders and affiliated directors could be viewed as sign of bad corporate governance.

In addition, Anderson and Bizjak (2003) presented that there is no significant relation between compensation level and presence of outsiders on compensation committee. Furthermore, they pointed out that after CEO leave compensation committee, the compensation level increases rather than decreases. The participation of CEO on compensation committee has positive effect on controlling CEO compensation.

Sun and Cahan (2009) examined whether the quality of compensation committee

affect the pay-performance relation. They concluded that membership of CEO on compensation committee would increase the pay-performance relation in advantage of CEO's experience and expertise. But the relation decreased when the CEO appointed director sit on compensation committee the relation would decrease.

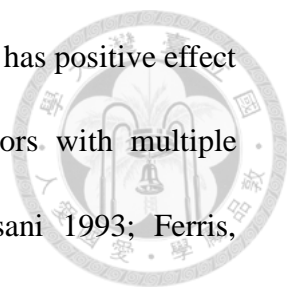
Moreover, Bolye and Roberts (2012) examined whether CEO membership on compensation committee would lead to CEO opportunistic behavior in compensation decision in New Zealand firms. The evidence showed that the compensation is negatively related to CEO membership on compensation committee. Therefore, the hypothesis that CEO would have self-serving behavior when he serves as committee member is not supported.

However, with the mixing evidence about the independence of the compensation committee, independent committee is still suggested to be more effective in determining appropriate compensation in Taiwanese firms. This idea gives rise to the following hypothesis:

H2. Presence of independent director in compensation committee is positively related to pay to performance relation.

2.2.2. Board Overlapping

Directorship overlapping across boards has also been investigated by several research, and those research have found mixing evidence. On the positive view, reputation hypothesis is assumed that directors serving on larger board or board in larger firm would attract directorships, and they are more likely to be active in



maintaining their reputation. The number of directors' directorships has positive effect on the quality of board they serve, and participation of directors with multiple directorships on board is a sign of good governance (Shivdasani 1993; Ferris, Jagannathan, and Pritchard 2003; Sun and Cahan 2009). For example, Shivdasani (1993) investigated whether the differences in structure of equity ownership and director of board lead to the incidence of hostile takeovers. The result indicated that firm with directors who hold fewer directorships on board would be more likely to be hostile takeover targets.

Ferris et al. (2003) tried to investigate the effect of director with multiple directorships on corporate governance. In the analysis result, it presented that firm performance has positive effect on directors' number of directorship, and multiple directorships do not have negative effect on subsequent performance. Additionally, multiple directorships do not decrease the monitoring ability of directors. That is, directors with multiple directorships participate in more board committees and attend more committee meeting than other directors do. Moreover, they found that firm experiences positive abnormal return after announcing directors with multiple directorships. Implicitly, shareholders have sensed that participation of directors with multiple directorships can increase the effectiveness of board. Also, Sun and Cahan (2009) suggested that additional directorships would increase pay-to-performance relation.

On the other side, the comment supporting the busyness hypothesis argued that multiple directorships would shrink director's ability of effectively monitoring. For

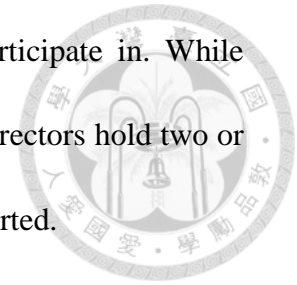
example, Core et al. (1999) examined the effect of corporate governance on CEO compensation and firm performance. They contended that busy directors sitting on board leads to CEO excess compensation and hence poor firm performance. Thus, it should be seemed as signal of weak corporate governance.

Other two studies, Fich and Shivdasani (2006) and Jiraporn, Singh and Lee (2009) extended the research of Ferris et.al (2003) but presented inconsistent evidence. Fich and Shivdasani (2006) was inspired by the case of Ms. Chao who was President George W. Bush's cabinet.⁹ They examined whether the negative effect of busy director on firm value exists in common firms. They defined busy director as those directors who hold three or more than three directorships. The finding evidence presented that the more busy directors sit on board, the poorer market performance firms have. Furthermore, they pointed out that majority of busy directors on board would be ineffective in removing CEO for poor performance. The result indicated that multiple directorships contribute to ineffective corporate governance.

Jiraporn et al. (2009) examined the relation between multiple directorships and directors' monitoring ability. They found that the relation is a U-shaped curve. When directors serve two or less boards, the relation between number of directorship and number of committee participating is negative; directors serve more than two boards,

⁹ The Wall Street Journal reported that legislation regulators tended to limit the number of board seats. Coincidentally, Ms. Chao who was a nominee for President-elect George W. Bush's cabinet was featured as one of the 10 busiest directors among large U.S. corporations by the Journal. As expected, she resigned 6 directorships upon her cabinet confirmation. And the cumulative abnormal returns of these 6 firms were positive after the announcement.

the more directorships they hold, the more committees they participate in. While according to their descriptive statistic result, about 88 percent of directors hold two or less directorships, and therefore busyness hypothesis is more supported.



Overall, reflecting to the situation in Taiwan, board overlapping could lead positive or negative effect on Taiwanese firms. On the positive side, because of insufficient experts in the initial period of mechanism introduction, experts would serve on multiple compensation committees and provide their experience to those committees. Thus, the presence of directors with multiple directorships may increase committee quality. On the opposite side, because establishing new compensation policy would take much time, the directorships on multiple compensation committees would make directors too busy to effectively monitor all firms. Hence, according to those assumptions, the effect of multiple directorships is uncertain. Based on this idea, the following hypothesis is developed:

H3. The pay-to-performance relation is expected to be different in companies with a high proportion of director with multiple directorships on compensation committee from in the lower ones.

2.2.3. Committee Overlapping

The meaning of overlapping here is defined in a narrow extent that directors may simultaneously serve on various committees, especially common membership across compensation and audit committee discussed in this paper. Prior studies have presented that overlapping between compensation committee and audit committee

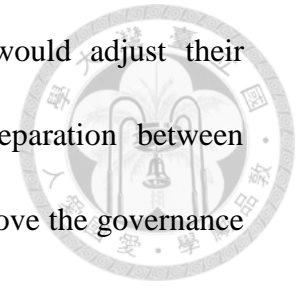
would lead to spillover effect to compensation committee and lead to more appropriate and motivating compensation policy.

For example, Zheng and Cullinan (2010) tried to investigate the relation between compensation structure and common membership across compensation committee and audit committee. The findings indicated that overlapping would lead to increase in stock-based compensation and decrease in option-based compensation. That is, the knowledge of misstatement-inducing would spillover from audit committee to compensation committee and therefore compensation committee tends to substitute other incentive pay (e.g. stock-based pay) for the misstatement-inducing pay (e.g. option-based pay).

In addition, according to the survey of Hermanson, Tompkins, Veliyath and Ye (2012), some interviewees have remarked the spillover effect that overlapping would lead to sharing the notion of risk between committees and therefore the committees would adjust their monitoring action to prevent or deter managerial self-serving behavior.

On the contrary, Laux and Laux (2009) employed analytical methodology to demonstrate that higher task separation on board would improve corporate governance. They found that compensation committee member would not sense the cost of monitoring CEO's earning management behavior when they do not serve on audit committee. Therefore, compensation committee would favor to pay CEO higher performance-sensitive compensation, such as stock-based compensation. Furthermore, they indicated that the increase of equity-based compensation does not necessarily

lead to more earning management because audit committee would adjust their monitoring action for the compensation. Conclusively, task separation between committees would increase the pay-performance relation and improve the governance mechanism of board.



In the subsequent research, Liao and Hsu (2013) examined the effect of common membership on compensation sensitivity and earning quality. They provided empirical evidence that common membership would lead to lower pay-performance relation and earning quality. In summary, common membership is examined to decrease the quality of compensation committee and therefore pay-to-performance relation in these research.

Overall, prior studies have showed that common membership could increase or decrease quality of compensation committee. Based on the uncertain effect of common membership, hypothesis on the effect of common membership between committees on compensation committee quality is developed as following:

H4. The pay-to-performance relation is expected to be different in companies with audit committee member on compensation committee from in those without.

3. Research Design

In this section, detailed description of the sample source, selection techniques, research method, and variable measurement of this study are presented.



3.1. Sources and Sample

According to the legislator regulation, all listed companies on Taiwan Stock Exchange (TSE) and GreTai Securities Market (GTSM) should have set the compensation committee and disclosed the information of committee composition and operation in the annual report before 2012. This study uses data from firms listed on the TSE and GTSM, covering the period between 2010 and 2012. All data of corporate governance and financial report are obtained from the Taiwan Economics Journal (TEJ) database. The raw sample consists of 4,398 observations in Model 1. I delete the observations from financial industry and those without available cash compensation, compensation committee, or financial and market data that this study needs and leave a final sample of 4,005 firm-years. In Model 1 in 2010 & 2011, I use 1,313 sample firms in 2010 and 1,348 in 2011 to investigate the effect of compensation committee in the introduction year. While in Model 1 in 2010 & 2012, I examine the effect of compensation committee in 2012, and I use data of 1,313 sample firms in 2010 and 1,344 in 2012. And 2,692 firm-years with compensation committee are the observations for examining the effective compensation committee composition in Model 2. The sample selection process and the detailed classification and distribution of Model 1 and Model 2 are as follow:

Table 1. Sampling Process

	Model 1	Model 2
Raw sample of listed firm on TSE and GTSM (Firm year)	4,398	2,933
Less: Firms from financial industry	132	88
Lack of compensation information	199	117
Lack of market performance information	33	11
Lack of compensation committee information	17	17
Voluntarily set compensation committee ¹⁰	12	8
Final sample of listed firm on TSE and GTSM (Firm year)	4,005	2,692
Firm listed on TSE	2,216	1,483
2012	740	740
2011	743	743
2010	733	0
Firm listed on GTSM	1,789	1,209
2012	604	604
2011	605	605
2010	580	0
Model 1 in 2010 & 2011	2,661	
Model 1 in 2010 & 2012	2,657	

¹⁰ This paper focuses on the effect of mandatory compensation committee. Therefore, firms which voluntarily set compensation committee are not included in sample. There are four firms (2330 台積電、3293 鈹象、3527 聚積、3702 大聯大) setting compensation committee in board before the introduction of legislation of compensation committee.

3.2. Research Design and Empirical Model

This study investigates the effect of mandatory compensation committee on compensation sensitivity. Referring to Sun and Cahan (2009), I develop Model 1 for assessing the impact of mandatory compensation committee on pay-to-performance relation is as followed:



Model 1:

$$\begin{aligned} \ln(CCMP)_{it} = & \beta_0 + \beta_1 ROE_{it} + \beta_2 CC_{it} + \beta_3 CC_{it} * ROE_{it} + \beta_4 RET_{it} \\ & + \beta_5 BLOCKSHD_{it} + \beta_6 FAM_{it} + \beta_7 MB_{it} + \beta_8 FSIZE_{it} \\ & + \text{industry dummies} + \varepsilon \end{aligned}$$

where:

$\ln(CCMP)_{it}$ = the logarithm of top managements' average cash compensation (in thousands of dollars) in firm i in year t;

ROE_{it} = earnings after tax before extraordinary items over average equity of firm in in year t;

CC_{it} = the dummy variable of compensation committee of firm i in year t.

If compensation committee exists on board, it is equal to 1 and 0 otherwise;

$CC_{it} * ROE_{it}$ = the return on equity of firm i in year t if there is compensation committee on board;

RET_{it} = the stock return of firm i in year t;

$BLOCKSHD_{it}$ = the shareholding owned by outside blockholders of firm i in year t ;

FAM_{it} = the dummy variable of family-controlled firm i in year t . If firm is controlled by family, it is equal to 1 and 0 otherwise;

MB_{it} = the market-to-book ratio of firm i in year t ;

$FSIZE_{it}$ = the firm size of firm i in year t .

Referring to Conyon and Peck (1998), Vefcas (2003), Sun and Cahan (2009), and Boyle and Roberts (2012), I develop the following model to examine the effect of compensation committee composition on pay-to-performance relation:

Model 2:

$$\begin{aligned} \ln(CCOMP)_{it} = & \gamma_0 + \gamma_1 ROE_{it} + \gamma_2 ID_{it} + \gamma_3 ID_{it} * ROE_{it} + \gamma_4 MultiDir_{it} \\ & + \gamma_5 MultiDir_{it} * ROE_{it} + \gamma_6 AC_{it} + \gamma_7 AC_{it} * ROE_{it} \\ & + \gamma_8 RET_{it} + \gamma_9 BLOCKSHD_{it} + \gamma_{10} FAM_{it} + \gamma_{11} MB_{it} \\ & + \gamma_{12} FSIZE_{it} + \text{industry dummies} + \varepsilon \end{aligned}$$

where:

$\ln(CCOMP)_{it}$ = the logarithm of top managements' average cash compensation (in thousands of dollars) in firm i in year t ;

ROE_{it} = earnings after tax before extraordinary items over average equity of firm i in year t ;

ID_{it} = participation of independent director in compensation committee for firm i in year t . If any independent director sits on compensation committee, it is equal to 1 and 0 otherwise;

$ID_{it} * ROE_{it}$ = the return on equity of firm i in year t if any independent director serves in compensation committee;

$MultiDir_{it}$ = the proportion of director with multiple directorships in compensation committee for firm i in year t;

$MultiDir_{it} * ROE_{it}$ = interaction of the proportion of director with multiple directorships in compensation committee with the return on equity of firm i in year t;

AC_{it} = overlapping between compensation committee and audit committee for firm i in year t. If any compensation committee member sits on audit committee, it is equal to 1 and 0 otherwise;

$AC_{it} * ROE_{it}$ = the return on equity of firm i in year t if any audit committee member serves in compensation committee;

RET_{it} = the stock return of firm i in year t;

$BLOCKSHD_{it}$ = the shareholding owned by outside blockholders of firm i in year t;

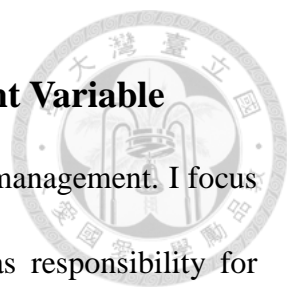
MB_{it} = the market-to-book ratio of firm i in year t;

$FSIZE_{it}$ = the firm size of firm i in year t.

FAM_{it} = the dummy variable of family-controlled firm i in year t. If firm is controlled by family, it is equal to 1 and 0 otherwise.

3.3. Variables Measurements

3.3.1. Top Managements Cash Compensation: Dependent Variable



The compensation proxy is the total cash compensation of top management. I focus on compensation of top management because top management has responsibility for overall performance of the corporate. In addition, the compensation of top management is what compensation committee primarily monitors. On the other side, I use the cash compensation because compensation data, such as salary, cash bonus, and other cash compensation is relatively accessible from TEJ Database. The information about value of equity-based compensation is not available in Taiwan. Previous Taiwanese research of Lin (2005) and Lee and Chen (2011) used cash compensation as compensation variable. Moreover, Sun and Cahan (2009) explained that total cash compensation is a better proxy for cash compensation than other component, i.e. salary only or bonus only. The reason is that companies would compensate management for lower salary with higher bonus. Hence, compensation was measured as summation of salary, cash bonus, and other cash miscellaneous earnings of corporate top management (Lambert and Larcker 1987; Conyon and Peck 1998; Anderson and Bizjak 2003; Sun and Cahan 2009; Lee and Chen 2011).

Since data of cash compensation are disclosed as the summation of cash compensation of all president and vice presidents, cash compensation is estimated by dividing total cash compensation by the number of presidents and vice presidents. Additionally, for reducing heteroscedasticity, the logarithm of average cash compensation is adopted as the compensation variable (Finkelstein and Hambrick 1989).

3.3.2. Compensation Committee Variables

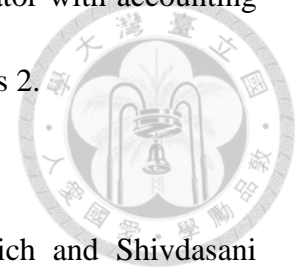
Compensation committee existence. To test Hypothesis 1, the interaction of *CC* with *ROE* is included as testing variable in Model 1.¹¹ Moderator variable of compensation committee (*CC*) is equal to one if there is compensation committee on board and zero otherwise. Main and Johnston (1993), Conyon and Peck (1998), Conyon and He (2004), and Chalevas (2011) used this measure. The coefficient on *CC*ROE*, β_3 , indicates how the relation between cash compensation and firm performance when compensation committee exists. A significantly positive coefficient, for example, would indicate that compensation committee improves pay-to-performance relation.

Independence. Previous research used several measurements to determine independence of compensation committee, such as proportion of insider member, outsider member, CEO, and CEO appointed director on committee. However, for convenience in measurement, the participation of independent directors would be proxy for committee independence.¹² *ID* variable is equal to one when there is any independent director serving on compensation committee and zero otherwise. Anderson and Bizjak (2003) also used this measure. Hypothesis 2 indicates that independent directors on compensation committee would improve pay to performance relation.

¹¹ Market performance, e.g. *RET* in this study, is not proxy for firm performance because market performance would be affected by market noise.

¹² The legislation of compensation committee regulates that insiders could serve on committee in the first three implementation years. However, it is hard to identify insider or management-affiliated director committee member, while it is easy to identify independent director according the disclosure in annual report.

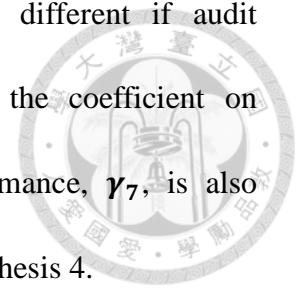
Hence, the coefficient on interaction of independent director indicator with accounting performance, γ_3 , is expected to be positive to support for Hypothesis 2.



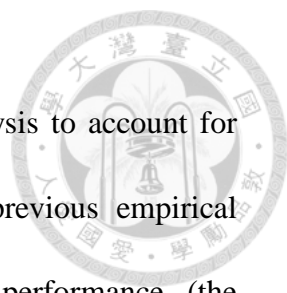
Board Overlapping. Consistent with Core et al. (1999), Fich and Shivdasani (2006), and Sun and Cahan (2009), director with multiple directorships is defined as director who serves on three or more than three compensation committees, and the *MultiDir* is estimated by the number of director with multiple directorships over committee size. The proportion of director with multiple directorships in compensation committee is expected to affect pay-to-performance relation in Hypothesis 3. The coefficient on interaction of proportion of director with multiple directorships in compensation committee and accounting performance, γ_5 , is expected to be significantly different from zero.

Committee Overlapping. This paper focuses on common membership between compensation committee and audit committee for two reasons. First, compensation committee and audit committee are more prevalent in Taiwanese firms than other board committees. Second, compensation committee and audit committee are closely related to each other. That is, audit committee oversees the financial reporting process and compensation committee use the information of the report as performance measurement; compensation decisions affect the risk which audit committee will bear. Hence, *AC* is an indicator that is equal to 1 if there is any audit committee member sitting on compensation committee and zero otherwise. Liao and Hsu (2013) used this

measurement. The pay-to-performance is also expected to be different if audit committee member serves on compensation committee. Thus, the coefficient on interaction of audit committee indicator with accounting performance, γ_7 , is also expected to be significantly different from zero to support for Hypothesis 4.



3.3.3. Control Variables



I include a series of control variables in the regression analysis to account for firm characteristics that influence compensation. Referring to previous empirical research on compensation, I include measures of financial performance (the accounting return of equity, *ROE*, and the annual return on common stock, *RET*), ownership structure (the percentage of firm equity held in blocks of 5 percent or in top ten blocks, *BLOCKSHD*, and family controlling indicator, *FAM*), investment opportunity (market-to-book ratio, *MB*), firm size (logarithm of total asset, *FSIZE*), and industry dummy. To preclude the effect of outlier, all continuous variables are winsorized in the highest and lowest 10% interval.

Financial performance is measured by accounting performance, *ROE*, and market performance, *RET*. *ROE* is calculated by earnings before extraordinary items divided by average shareholders' equity. *RET* is estimated by geometric average of monthly return on investment. According to the research about pay-to-performance discussed in Section 2, the level of pay can be determined by function of firm performance. In my study, the performance control variable is used to test whether top management compensation is linked to firm performance (Vefeeas 2003). The coefficients on *ROE* and *RET* are expected to be positive.

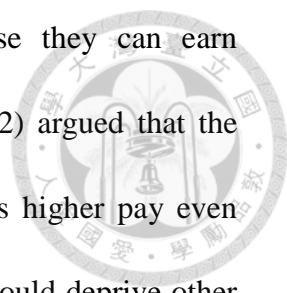
Ownership structure is measured using the shareholding of blockholders, *BLOCKSHD*, and family controlling indicator, *FAM*. *BLOCKSHD* is the sum of shareholding of all blockholders. According to the report requirement of Taiwan, blockholders are defined as those who hold more than 10% shareholding. And the

definition is argued to be biased since the breach is so high that few of stockholders would own more than 10% percent in large company (Huang, Chu, Chang, and Chen 2013). Thus, I define that blockholders are those who hold five or more than five percent of shareholding or those who are listed as the top ten main shareholders in annual report. The definition is conceptually similar to that in Mehran (1995), Conyon and Peck (1998), Daily et al. (1998), Core et al. (1999), Anderson and Bizjak (2003). Presence of larger blockholders, representing the externally controlled firm, may improve monitoring and corporate governance (Hambrick and Finkelstein 1995), and therefore more effectively control compensation decision (Finkelstein and Hambrick 1989; Daily et al. 1998; Conyon and Peck 1998; Chalevas 2011). Therefore, the coefficient on *BLOCKSHD* is expected to be negative.

According to evidence from Yeh, Lee, and Woidtke (2001), 76% of all Taiwan listed firms are controlled by single family, and the family-controlled firm is more prevalent than early years. Considering the special feature of firms in Taiwan, the family controlling indicator, *FAM*, is included as control variable.¹³ *FAM* is a binary variable which equals one if firm is controlled by family and zero otherwise. Prior Hong Kong research of Cheng and Firth (2006) showed that family members as

¹³ Firm is controlled by single family when:

- (1) Members from single family serve as chair of board and president.
- (2) More than 50 percent of board director are controlled by one family and the proportion of familiar director and outside director are less than 33 percent.
- (3) More than 33 percent of board director are controlled by one family and at least three member of the family serve as directors or managers.
- (4) Shareholdings owned by family are more than critical control level.



managements are willing to receive less compensation because they can earn substantial dividend from large shareholding. Teng and Lee (2012) argued that the family-controlled firm would tend to pay family-related managers higher pay even though firm doesn't perform well. The insensitive compensation would deprive other shareholders benefit. Owing to the contrary view of family controlled firm, coefficient on *FAM* is expected to be different from zero.

In additional, Smith and Watts (1992) indicated that firms with more investment opportunity pay CEO higher salary. Investment opportunity, *MB*, is measured by equity market value over equity book value presenting as growth opportunity. Research of Smith and Watts (1992), Core et al. (1999), and Leone et al. (2006) used the measure. According to the finding of Smith and Watts (1992), the coefficient on *MB* is expected to be positive.

It is intuitive that large firms tend to pay high compensation to attract and retain talented management. And the high pay in large firm reflects the return to complex job (Baker, Jensen and Murphy 1988; Conyon and Peck 1998; Lee and Chen 2011). Firm size, *FSIZE*, is measured by logarithm of total asset in line with Anderson and Bizjak (2003) and Liao and Hsu (2013). The coefficient on *FSIZE* is expected to be positive. Finally, to control the fixed industry effects, I also add the dummy variables for each two-digit Standard Industrial Classification of R.O.C. industry.

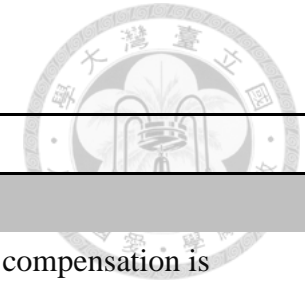


Table 2. Definitions of Variables

Variables	Label	Definition
<i>Dependent Variables</i>		
Cash Compensation of Top Managements	$\ln(CCOMP)$	Cash compensation includes salary and cash bonus. Average cash compensation is estimated by total cash compensation for all directors divided by the number of top managements. And the variable is the logarithm of average cash compensation.
Cash Bonus of Top Managements	$\ln(Bonus)$	Average cash bonus is estimated by cash bonus for all top managements divided by the number of top managements. And the variable is the logarithm of average cash bonus.
<i>Testing Variables</i>		
Introduction of Compensation Committee	CC	If compensation committee is set in board, the CC variable would be one, and zero, otherwise.
Committee Composition: Independent Director	ID	If there is any independent director serving in compensation committee, the ID variable would be one, and zero, otherwise.
Committee Composition: Director with Multiple Directorships	$MultiDir$	Director with multiple directorships is defined as director who serves on three or more than three compensation committees, and $MultiDir$ is calculated by the number of director with multiple directorships divided by the size of compensation committee.



(Continued)

Variables	Label	Definition
Committee Composition: Audit Committee Member	<i>AC</i>	If there is any audit committee director serving in compensation committee, the <i>AC</i> variable would be one, and zero, otherwise.
<i>Performance measurements</i>		
Return of equity	<i>ROE</i>	The ratio of earnings before extraordinary items divided by average shareholders' equity.
Return of asset	<i>ROA</i>	The ratio of earnings before interest, tax, depreciation, and amortization to average total asset.
<i>Firm characteristics</i>		
Return of stock	<i>RET</i>	The geometric average of monthly return on common stock investment.
Blockholders shareholding	<i>BLOCKSHD</i>	Shareholding owned by outside blockholders who own more than 5% of shareholding or are listed as top ten main shareholders in annual report.
Family Controlled	<i>FAM</i>	If the firm is controlled by single family, the variable would be one and zero, otherwise.
Investment Opportunity	<i>MB</i>	Market value of average equity divided by book value of common equity.
Firm Size	<i>FSIZE</i>	The natural logarithm of total asset in the end of the year.

4. Descriptive Statistics and Empirical Results

4.1. Descriptive Statistics and Other Analyses


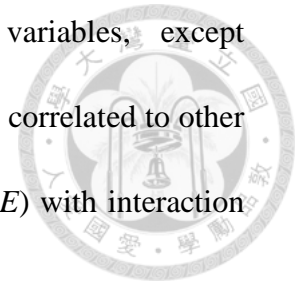


Table 3, Panel A summarizes the descriptive statistics of variables included in Model 1 in 2010 & 2011 which examines the effect of compensation committee in the first implementation year. These managements' mean cash compensation is equal to 2,914 thousand NT dollars. The mean value of accounting return of equity is 6.93 and the mean value of stock return is -6.19. The percentage of ownership of all outside blockholders has a mean of approximately 20.23% of the outstanding equity. In addition, 62% of Taiwanese firms are controlled by single family, and the result is consistent with Yeh et al. (2001). The sample has an average market-to-book ratio of 1.64 and a mean firm size, measured by logarithm of total asset, of 15.26.

Panel B of Table 3 partitions the sample in two groups based on whether firm has compensation committee. There are 1,348 observations with compensation committee and 1,313 observations without compensation committee. I find that in the implementation year firms have significantly (at the 1 percent level) lower investment opportunity. In addition, firms in 2011 have significant lower return of equity (5.2268 vs. 8.6874, significant at the 1 percent level) and lower stock return (-25.7320 vs. 13.8654, significant at the 1 percent level). However, the univariate results do not provide any evidence that presence of compensation committee is significantly related to pay-to-performance relation.

Table 3, panel C shows the result of Pearson Correlations coefficients between dependent variable and independent variables. The result reveals that cash

compensation is significantly related to all independent variables, except compensation committee dummy variable, and all variables are not correlated to other variables. The highest correlation is between return of equity (*ROE*) with interaction variable (*CC*ROE*) ($r=0.6809, p<0.05$).



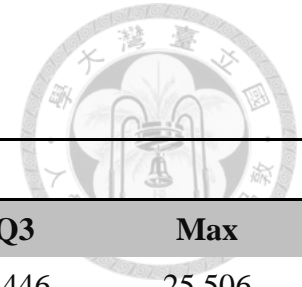
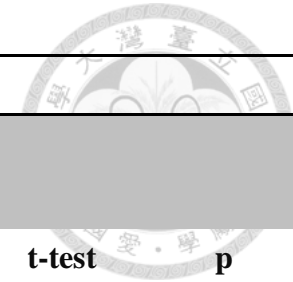


Table 3. Descriptive Statistics and Other Information of Model 1 in 2010&2011

Panel A: Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>CCOMP</i>	2,661	2,914	2,114	21.5	1,725	2,422	3,446	25,506
<i>ln(CCOMP)</i>	2,661	7.79	0.62	3.07	7.45	7.79	8.14	10.15
<i>ROE</i>	2,661	6.93	15.96	-64.23	1.52	8.42	15.53	48.37
<i>CC</i>	2,661	0.51	0.50	0	0	1	1	1
<i>CC*ROE</i>	2,661	2.65	11.82	-64.23	0	0	7.02	41.71
<i>RET</i>	2,661	-6.19	43.20	-73.59	-34.75	-14.64	11.97	229.19
<i>BLOCKSHD</i>	2,661	20.23	11.31	2.77	12.01	18.20	26	59.77
<i>FAM</i>	2,661	0.62	0.49	0	0	1	1	1
<i>MB</i>	2,661	1.64	1.18	0.34	0.90	1.32	1.97	8.29
<i>FSIZE</i>	2,661	15.26	1.42	12.44	14.26	15.06	16.07	19.67



Panel B: Univariate analysis

<i>Variables</i>	Firms with Compensation Committee,		Firms without Compensation Committee,		t-test	p		
	N=1,348	Mean	SD	N=1,313			Mean	SD
<i>CCOMP</i>		2,935	2,119		2,893	2,109	-0.5212	0.6023
<i>ln(CCOMP)</i>		7.7947	0.6307		7.7815	0.6155	-0.5467	0.5846
<i>ROE</i>		5.2268	16.2057		8.6874	15.5077	5.6257	0.0000
<i>RET</i>		-25.7320	27.4948		13.8654	47.0300	26.5967	0.0000
<i>BLOCKSHD</i>		20.5756	11.6744		19.8843	10.9155	-1.5769	0.1149
<i>FAM</i>		0.6172	0.4862		0.6230	0.4848	0.3075	0.7585
<i>MB</i>		1.3334	0.9754		1.9589	1.2909	14.1242	0.0000
<i>FSIZE</i>		15.2687	1.4290		15.2435	1.4179	-0.4575	0.6473

Panel C: Pearson correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>ln(CCOMP)</i> (1)	1.0000								
<i>ROE</i> (2)	0.2696	1.0000							
<i>CC</i> (3)	0.0106	-0.1085	1.0000						
<i>CC*ROE</i> (4)	0.1802	0.6809	0.2210	1.0000					
<i>RET</i> (5)	0.0425	0.3765	-0.4584	0.0939	1.0000				
<i>BLOCKSHD</i> (6)	-0.1686	-0.0439	0.0306	-0.0270	0.0942	1.0000			
<i>FAM</i> (7)	-0.1002	0.0000	-0.0060	0.0124	0.0425	0.1501	1.0000		
<i>MB</i> (8)	0.0561	0.2259	-0.2642	0.0570	0.4171	0.1282	-0.0462	1.0000	
<i>FSIZE</i> (9)	0.4421	0.1949	0.0089	0.1217	0.0389	-0.1011	0.0383	-0.1436	1.0000

Note: 1. CCOMP is average total cash compensation of top managers in thousands of NT dollars.

2. Variable definitions are presented in Table 2.

Descriptive statistics of variables in Model 1 in 2010 & 2012 which tests the effect of compensation committee in the second year is presented in Table 4, Panel A. These managements' mean cash compensation is equal to 2,951 thousand NT dollars. The mean value of accounting return of equity is 6.12 which is similar to that of Model 1 in 2010 & 2011. But the mean value of stock return (15.40) is significantly higher than that in Model 1 in 2010 & 2011. The mean of percentage ownership of all outside blockholders, percentage of family-controlled firm, mean of market-to-book ratio, and the average firm size are similar to those in Model 1 in 2010 & 2011.

Panel B of Table 4 also partitions the sample in two groups based on whether firm has compensation committee. There are 1,344 observations with compensation committee and 1,313 observations without compensation committee. I find that in the secondary implementation year, 2012, firms also have significant lower return of equity (3.6065 vs. 8.6874, significant at the 1 percent level). But the stock return is higher in 2012 (16.9010 vs. 13.8654, significant at the 1 percent level). However, the univariate results of Model 1 in 2010 & 2012 also do not provide any evidence that presence of compensation committee is significantly related to pay-to-performance relation.

The result of Pearson Correlations coefficients between dependent variable and independent variables is showed in Panel B. The result is similar with Model 1 in 2010 & 2011 which reveals that cash compensation is significantly related to all independent variables, except compensation committee dummy variable, and all variables are not correlated to other variables. The highest correlation is between return of equity (*ROE*) with interaction variable (*CC*ROE*) ($r=0.7199$, $p<0.05$).

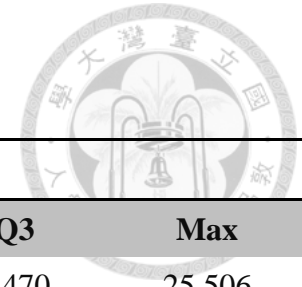
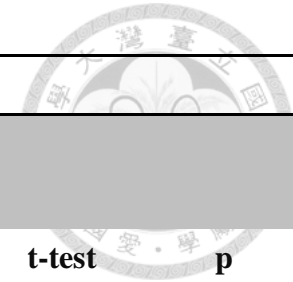


Table 4. Descriptive Statistics and Other Information of Model 1 in 2010 & 2012

Panel A: Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>CCOMP</i>	2,657	2,951	2,148	14.67	1,748	2,444	3,470	25,506
<i>ln(CCOMP)</i>	2,657	7.80	0.62	2.69	7.47	7.80	8.15	10.15
<i>ROE</i>	2,657	6.12	16.88	-85.30	0.91	7.71	14.94	48.37
<i>CC</i>	2,657	0.51	0.50	0	0	1	1	1
<i>CC*ROE</i>	2,657	1.82	12.77	-85.30	0	0	5.82	46
<i>RET</i>	2,657	15.40	41.74	-53.98	-10.40	7.63	31.40	229.19
<i>BLOCKSHD</i>	2,657	20.33	11.18	2.77	12.08	18.30	26.28	57.36
<i>FAM</i>	2,657	0.62	0.49	0	0	1	1	1
<i>MB</i>	2,657	1.73	1.28	0.40	0.95	1.38	2.06	8.47
<i>FSIZE</i>	2,657	15.26	1.43	12.29	14.27	15.07	16.07	19.79



Panel B: Univariate analysis

<i>Variables</i>	Firms with Compensation Committee,		Firms without Compensation Committee,		t-test	p		
	N=1,344	Mean	SD	N=1,313			Mean	SD
<i>CCOMP</i>		3,009	2,184		2,893	2,109	-1.3913	0.1643
<i>ln(CCOMP)</i>		7.8203	0.6254		7.7815	0.6155	-1.6111	0.1073
<i>ROE</i>		3.6065	17.7735		8.6874	15.5077	7.8444	0.0000
<i>RET</i>		16.9010	35.7776		13.8654	47.0300	-1.8752	0.0609
<i>BLOCKSHD</i>		20.7679	11.4244		19.8843	10.9155	-2.0376	0.0417
<i>FAM</i>		0.6198	0.4856		0.6230	0.4848	0.1704	0.8647
<i>MB</i>		1.5116	1.2200		1.9589	1.2909	9.1820	0.0000
<i>FSIZE</i>		15.2839	1.4417		15.2435	1.4179	-0.7280	0.4467

Panel C: Pearson correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>ln(CCOMP)</i> (1)	1.0000								
<i>ROE</i> (2)	0.2415	1.0000							
<i>CC</i> (3)	0.0313	-0.1505	1.0000						
<i>CC*ROE</i> (4)	0.1553	0.7199	0.1413	1.0000					
<i>RET</i> (5)	0.0383	0.3647	0.0364	0.2586	1.0000				
<i>BLOCKSHD</i> (6)	-0.1641	-0.0015	0.0395	0.0311	0.0855	1.0000			
<i>FAM</i> (7)	-0.1123	-0.0104	-0.0033	-0.0013	0.0406	0.1568	1.0000		
<i>MB</i> (8)	0.0655	0.1898	-0.1754	0.0615	0.3112	0.1141	-0.0490	1.0000	
<i>FSIZE</i> (9)	0.4412	0.1804	0.0141	0.1099	0.0366	-0.0860	0.0346	-0.1431	1.0000

Note: 1. CCOMP is average total cash compensation of top managers in thousands of NT dollars.

3. Variable definitions are presented in Table 2.

The descriptive statistic and Pearson Correlation result of Model 2 are presented in Panel A and B of Table 5. The sample tested in Model 2 is from the subgroup with compensation committee in Model 1 in 2010 & 2011 and 1-2. Hence, the descriptive statistic result is the consistent with the average of subgroup in Model 1 in 2010 & 2011 and 1-2 with compensation committee. Approximately 58.14 percent of the observations set independent director in their board,¹⁴ and the result is similar to the result of Liao (2013).¹⁵ On average, 16.06 percent of the directors on the compensation committee are director with multiple directorships. And about 5.83 percent of observations have audit committee member serving on compensation committee. Outside blockholders hold 20.6716 percent of outstanding equity, and about 61.85 percent of observations are controlled by family. The mean value of market-to-book ratio is 1.4224 and the mean value of firm size, measured by total asset, is 15.2763.

In Panel B, the Pearson Correlation result indicates that most of the coefficients are low. In addition, the result shows that cash compensation is significantly related to individual independent variables. Additionally, the presence of independent director, director with multiple directorships, or audit committee member on compensation committee would increase the association between accounting performance and market performance respectively ($r=0.1652, p<0.05$; $r=0.1897, p<0.05$; $r=0.0612, p<0.05$).

¹⁴ In the regulation of Taiwan, if there is any independent director serving on board, at least one independent director should serve in compensation committee and be nominated as chairman of committee.

¹⁵ Liao (2013) indicated that 63.2 percent of listed firms in Taiwan set independent director in their board.

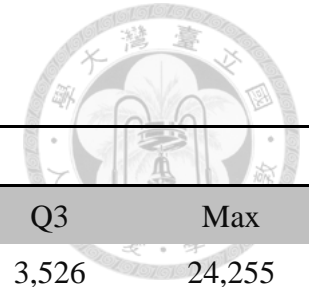


Table 5. Descriptive Statistics and Other Information of Model 2

Panel A: Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>CCOMP</i>	2,692	2,972	2,152	15	1,762	2,462	3,526	24,255
<i>ln(CCOMP)</i>	2,692	7.8075	0.6281	2.6856	7.4744	7.8085	8.1678	10.0964
<i>ROE</i>	2,692	4.4179	17.0226	-85.3	0.15	6.32	13.22	46
<i>ID</i>	2,692	0.5814	0.4934	0	0	1	1	1
<i>ID*ROE</i>	2,692	2.7287	13.4436	-85.3	0	0	8.94	46
<i>MultiDir</i>	2,692	0.1606	0.2371	0	0	0	0.3333	1
<i>MultiDir*ROE</i>	2,692	0.8781	4.4442	-39.5867	0	0	0.9633	30.59
<i>AC</i>	2,692	0.0583	0.2344	0	0	0	0	1
<i>AC*ROE</i>	2,692	0.2841	4.0753	-49.52	0	0	0	46
<i>RET</i>	2,692	-4.4472	38.3640	-73.5855	-32.2464	-7.6463	15.6278	159.8555
<i>BLOCKSHD</i>	2,692	20.6716	11.5485	2.89	12.26	18.62	26.57	59.77
<i>FAM</i>	2,692	0.6185	0.4858	0	0	1	1	1
<i>MB</i>	2,692	1.4224	1.1077	0.34	0.78	1.1	1.67	8.47
<i>FSIZE</i>	2,692	15.2763	1.4351	12.2913	14.2775	15.0778	16.1044	19.7854

Panel B: Pearson correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<i>ln(CCOMP)</i> (1)	1.0000												
<i>ROE</i> (2)	0.2306	1.0000											
	0.0000												
<i>ID</i> (3)	0.0494	0.0191	1.0000										
	0.0104	0.3218											
<i>ID*ROE</i> (4)	0.1652	0.7696	0.1723	1.0000									
	0.0000	0.0000	0.0000										
<i>MultiDir</i> (5)	0.1699	0.0417	0.0451	0.0435	1.0000								
	0.0000	0.0303	0.0192	0.0239									
<i>MultiDir *ROE</i> (6)	0.1897	0.5158	0.0304	0.3932	0.3087	1.0000							
	0.0000	0.0000	0.1152	0.0000	0.0000								
<i>AC</i> (7)	0.1259	0.0066	0.2112	0.0397	0.0559	-0.0062	1.0000						
	0.0000	0.7305	0.0000	0.0395	0.0037	0.7483							
<i>AC*ROE</i> (8)	0.0612	0.2225	0.0592	0.2905	-0.0009	0.1648	0.2802	1.0000					
	0.0015	0.0000	0.0021	0.0000	0.9625	0.0000	0.0000						
<i>RET</i> (9)	0.0763	0.3286	-0.0397	0.2561	-0.0047	0.1829	0.0192	0.1029	1.0000				
	0.0001	0.0000	0.0395	0.0000	0.8067	0.0000	0.3205	0.0000					


(Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<i>BLOCKSHD (10)</i>	-0.1597	-0.0048	-0.0705	-0.0406	-0.1155	-0.0101	-0.0565	0.0507	0.0853	1.0000			
	0.0000	0.8030	0.0003	0.0354	0.0000	0.6001	0.0033	0.0085	0.0000				
<i>FAM (11)</i>	-0.1075	0.0087	-0.1580	-0.0192	-0.0009	0.0317	-0.1374	0.0071	0.0042	0.1567	1.0000		
	0.0000	0.6525	0.0000	0.3206	0.9641	0.0997	0.0000	0.7135	0.8279	0.0000			
<i>MB (12)</i>	0.0828	0.1544	0.1234	0.2072	0.0054	0.1824	0.0753	0.1994	0.3791	0.1560	-0.0644	1.0000	
	0.0000	0.0000	0.0000	0.0000	0.7796	0.0620	0.0001	0.0000	0.0000	0.0000	0.0008		
<i>FSIZE(13)</i>	0.4462	0.1609	-0.1137	0.0815	0.2441	0.1367	0.0963	0.0080	0.0101	-0.0769	0.0366	-0.1277	1.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6766	0.6018	0.0001	0.0577	0.0000	

Note:

1. CCOMP is average total cash compensation of top managers in thousands of NT dollars.
2. Variable definitions are presented in Table 2.

4.2. Empirical Results



The empirical results of Model 1 in 2010 & 2011 are presented in Table 6. Column 1 displays the results of the effect of mandatory compensation committee on pay to performance relation for the whole sample. I find that in the implementation year compensation committee has no significant relationship with compensation sensitivity ($\beta_{14}=0.0000$, $p=0.984$). For firms with favorable performance or unfavorable performance, there is also no evidence to support that compensation committee improves pay-to-performance relation ($\beta'_{14}=0.0039$, $p=0.117$; $\beta''_{14}=-0.0018$, $p=0.521$). In addition, Table 7 also indicates that in the second implementation year, compensation committee is not significantly related to pay-to-performance relation no matter in all firms or in firms with favorable or unfavorable performance ($\beta_{21}=-0.0014$, $p=0.255$; $\beta'_{21}=-0.0004$, $p=0.881$; $\beta''_{21}=-0.0037$, $p=0.131$). Overall, there is no evidence that supports Hypothesis 1 that compensation committee increases compensation sensitivity in the first two implementation years.

Table 6. Regression Results of Model 1 in 2010 & 2011: Impacts of Compensation Committee Existence on Pay-Performance Relation

$$\ln(CCMP)_{it} = \beta_0 + \beta_{11}ROE_{it} + \beta_{12}CC_{it} + \beta_{13}CC_{it} * ROE_{it} + \beta_{14}RET_{it} + \beta_{15}BLOCKSHD_{it} + \beta_{16}FAM_{it} + \beta_{17}MB_{it} + \beta_{18}FSIZE_{it} + \text{industry dummies} + \varepsilon$$

Variable	Model 1 in 2010 & 2011			ROE>0			ROE<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	4.7140***	0.000	?	4.9350***	0.000	?	4.0618***	0.000
<i>ROE</i>	+	0.0073***	0.000	+	0.0098***	0.000	+	0.0021	0.375
<i>CC</i>	-	0.0490**	0.046	-	0.0043	0.913	-	0.0082	0.908
<i>CC*ROE</i>	+	0.0000	0.984	+	0.0039	0.117	+	0.0018	0.521
<i>RET</i>	+	-0.0004	0.220	+	0.0000	0.963	+	-0.0027***	0.002
<i>BLOCKSHD</i>	-	-0.0045***	0.000	-	-0.0058***	0.000	-	-0.0005	0.795
<i>FAM</i>	?	-0.0873***	0.000	?	-0.0790***	0.001	?	-0.1103**	0.035
<i>MB</i>	+	0.0463***	0.000	+	0.0245**	0.075	+	0.0300	0.218
<i>FSIZE</i>	+	0.1945***	0.000	+	0.1842***	0.000	+	0.2153***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,661			2,137			524	
<i>Adjusted R²</i>		30.03%			26.80%			33.63%	
<i>F-Value</i>		34.58***			24.01***			9.55***	

Note: 1. Variable definitions are presented in Table 2.

2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.



Table 7. Regression Results of Model 1 in 2010 & 2012: Impacts of Compensation Committee Existence on Pay-Performance Relation in 2010 & 2012

$$\ln(CCMP)_{it} = \beta_0 + \beta_{21}ROE_{it} + \beta_{22}CC_{it} + \beta_{23}CC_{it} * ROE_{it} + \beta_{24}RET_{it} + \beta_{25}BLOCKSHD_{it} + \beta_{26}FAM_{it} + \beta_{27}MB_{it} + \beta_{28}FSIZE_{it} + \text{industry dummies} + \varepsilon$$

Variable	Model 1 in 2010 & 2012			ROE>0			ROE<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	4.7168***	0.000	?	4.8358***	0.000	?	4.3253***	0.000
<i>ROE</i>	+	0.0075***	0.000	+	0.0093***	0.000	+	0.0030	0.186
<i>CC</i>	-	0.1030***	0.000	-	0.0818	0.034	-	0.2293***	0.000
<i>CC*ROE</i>	+	-0.0014	0.255	+	-0.0004	0.881	+	0.0037	0.131
<i>RET</i>	+	-0.0008***	0.007	+	-0.0005	0.146	+	-0.0024***	0.001
<i>BLOCKSHD</i>	-	-0.0048***	0.000	-	-0.0062***	0.000	-	-0.0003	0.864
<i>FAM</i>	?	-0.0917***	0.000	?	-0.0975***	0.000	?	-0.596	0.208
<i>MB</i>	+	0.0527***	0.000	+	0.0421**	0.001	+	0.0484**	0.020
<i>FSIZE</i>	+	0.1970***	0.000	+	0.1930***	0.000	+	0.1984***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,657			2,092			565	
<i>Adjusted R²</i>		30.26%			27.24%			32.99%	
<i>F-Value</i>		34.89***			24.02***			9.68***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.

The regression results of Model 2 are presented in Table 8. No evidence shows that presence of independent director on compensation committee increases pay-performance relation ($\gamma_3=-0.0023$, $p=0.063$). While in favorable performance firm, the participation of independent director is significantly positively related to the compensation sensitivity, supporting Hypothesis 2 ($\gamma'_3=0.0105$, $p=0.000$). Comparatively, the relation cannot be found in unfavorable performance firm ($\gamma''_4=-0.0050$, $p=0.025$). The evidence of positive effect of independence is consistent with Newman and Mozes (1999) and Vafeas (2003). Especially, Newman and Mozes (1999) found the effect of independence through opposite evidence that insiders would compensate CEO more for loss of granted stock option when firm experiences unfavorable stock performance.

In addition, the result shows that directors with multiple directorships would significantly increase compensation sensitivity ($\gamma_5=0.0059$, $p=0.039$), which supports Hypothesis 3. In favorable performance firm, the presence of director with multiple directorships has the same positive effect on committee quality ($\gamma'_5=0.0186$, $p=0.002$). The evidence is in line with the research of Shivdasani (1993), Ferris et al. (2003), and Sun and Cahan (2009) Those studies pointed out that director with multiple directorships bring experience and information to board and are more likely to be active in participating in board or committee to maintain their reputation. Therefore, the assumption that the presence of director with multiple directorship is a sign for good corporate governance is supported in my finding.

Moreover, I find that there is no evidence that participation of audit committee member on compensation committee is related to compensation sensitivity to support the

hypothesis even in favorable performance firm ($\gamma_7=-0.0001$, $p=0.959$; $\gamma'_7=-0.0053$, $p=0.333$; $\gamma''_8=0.0051$, $p=0.417$).

The results of control variables, except *RET*, are consistent with expected results and are similar in both Model 1 and Model 2. In Model 1, *RET* is significantly and negatively related to cash compensation ($\beta_1=-0.0002$, $p=0.002$) while it is not significant in Model 2 ($\gamma_1=0.0004$, $p=0.162$). Compared with the positive relation between *ROE* and compensation, the result of *RET* indicates that boards put more emphasis on accounting performance than market performance in determining top managers cash compensation. Compensation is decreasing with the percentage of outstanding equity blockholders. The result is consistent with previous research showing that presence of a larger blockholders, representing the externally controlled firm, may lead to improved monitoring and corporate governance (Hambrick and Finkelstein 1995; Finkelstein and Hambrick 1989; Daily et al. 1998; Conyon and Peck 1998; Chalevas 2011). Consistent with Cheng and Firth (2006), family-controlled firms pay top management with less compensation because management would earn substantial dividend from large shareholding. The market-to-book ratio is positively related to cash compensation. The result supports Smith and Watts (1992) which indicated that executives are more paid in firms with greater investment opportunity. The firm size is also positively related to compensation. The result is consistent with previous research that large firms tend to pay high compensation to attract and retain management (Baker, Jensen and Murphy 1988; Conyon and Peck 1998; Lee and Chen 2011).

Table 8. Regression Results of Model 2: Impacts of Composition of Compensation Committee on Pay-Performance Relation

$$\ln(CCMP)_{it} = \gamma_0 + \gamma_1 ROE_{it} + \gamma_2 ID_{it} + \gamma_3 ID_{it} * ROE_{it} + \gamma_4 MultiDir_{it} + \gamma_5 MultiDir_{it} * ROE_{it} + \gamma_6 AC_{it} + \gamma_7 AC_{it} * ROE_{it} + \gamma_8 RET_{it} + \gamma_9 BLOCKSHD_{it} + \gamma_{10} FAM_{it} + \gamma_{11} MB_{it} + \gamma_{12} FSIZE_{it} + \text{industry dummies} + \varepsilon$$

Variable	Model 2			ROE>0			ROE<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
Intercept	?	4.6832***	0.000	?	5.0443***	0.000	?	3.8617***	0.000
ROE	+	0.0067***	0.000	+	0.0025	0.295	+	0.0074	0.000
ID	-	0.0145	0.583	-	-0.1506***	0.000	-	0.0462*	0.435
ID*ROE	+	-0.0023*	0.063	+	0.0105***	0.000	+	-0.0050	0.025
MultiDir	?	0.0416	0.380	?	-0.1253	0.134	?	0.0410	0.738
MultiDir *ROE	?	0.0059**	0.039	?	0.0186***	0.002	?	0.0004	0.939
AC	?	0.0962**	0.042	?	0.1900**	0.025	?	0.1562	0.218
AC*ROE	?	-0.0001	0.959	?	-0.0053	0.333	?	0.0051	0.417
RET	+	0.0001	0.811	+	-0.0001	0.785	+	0.0004	0.577
BLOCKSHD	-	-0.0048***	0.000	-	-0.0068***	0.000	-	-0.0011	0.517
FAM	?	-0.0799***	0.000	?	-0.0824***	0.001	?	-0.0421	0.344
MB	+	0.0615***	0.000	+	0.389**	0.016	+	0.0384	0.104
FSIZE	+	0.1988***	0.000	+	0.1879***	0.000	+	0.2278***	0.000
Industry dummy	Included			Included			Included		
Sample Size	2,692			2,031			661		
Adjusted R²	30.90%			28.73%			36.15%		
F-Value	32.67***			22.53***			11.38***		

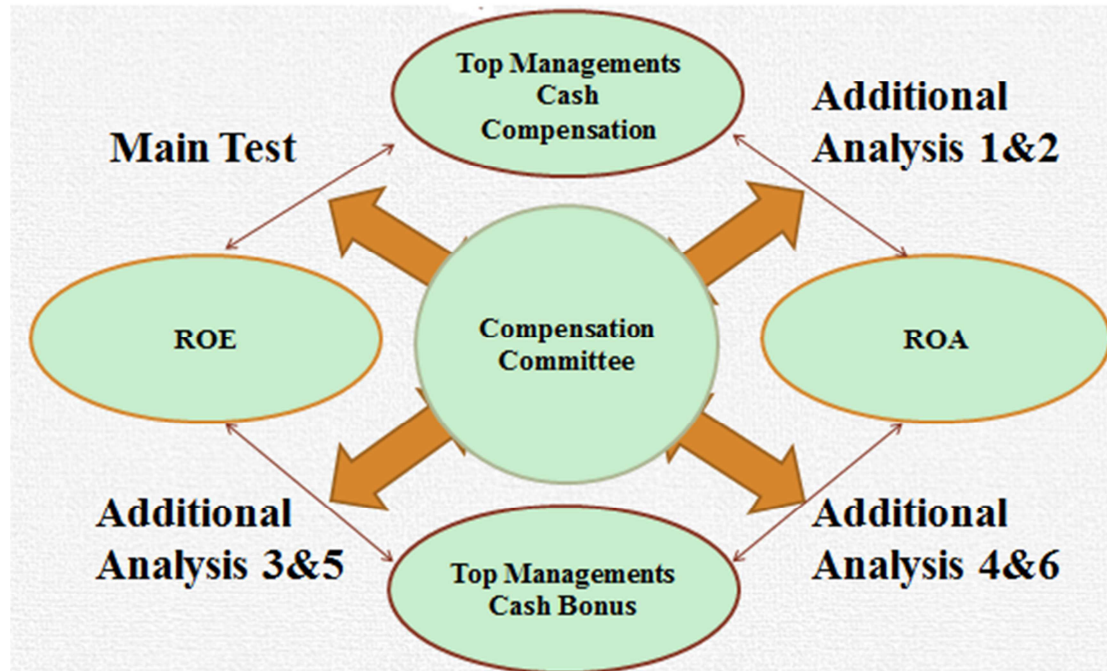
Note: 1. Variable definitions are presented in Table 2.

2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.

5. Additional Analysis

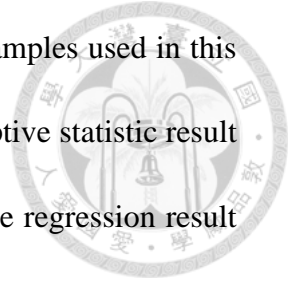
I test whether effect of compensation committee on pay-performance relation changes if using alternative accounting performance and compensation component in additional analyses. Accounting performance measurement, *ROE*, in main test, is replaced for *ROA* which is measured by earnings before interest, tax, depreciation, and amortization over average total asset. Compensation of top management (*CCOMP*) is substituted by bonus of top managements (*BONUS*). Instead of salary, bonus is adopted as substitution for total compensation is that bonus is more sensitive to performance than salary.

Figure 1. Frame of models



The descriptive statistic and regression result of Additional Analysis 1-1 which examines the effect of compensation on relation between *CCOMP* and *ROA* in the

first implementation year are presented in Table 9 and Table 12. Samples used in this test are the same as Model 1 in 2010 & 2011. Therefore, the descriptive statistic result is consistent, except the variables, *ROA* and *CC*ROA*. While as the regression result presented in Table 12, there is no significant evidence that compensation committee would increase the association between *ROA* and compensation of top management ($\beta_{13}=0.0024$, $p=0.301$), even in firms with favorable performance ($\beta'_{13}=0.0018$, $p=0.553$). The result of other control variables is in line with the result in Model 1 in 2010 & 2011.



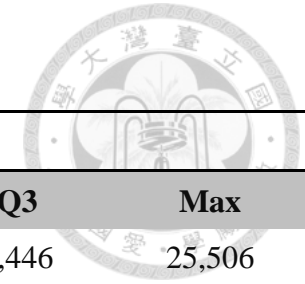


Table 9. Descriptive Statistics of Additional Analysis 1-1 (2010 & 2011)

Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>CCOMP</i>	2,661	2,914	2,114	21.5	1,725	2,422	3,446	25,506
<i>ln(CCOMP)</i>	2,661	7.79	0.62	3.07	7.45	7.79	8.14	10.15
<i>ROA</i>	2,661	9.47	8.88	-17.57	4.40	8.98	14.79	34.32
<i>CC</i>	2,661	0.51	0.50	0	0	1	1	1
<i>CC*ROA</i>	2,661	4.35	7.63	-17.57	0	0	8.35	33.57
<i>RET</i>	2,661	-6.19	43.20	-73.59	-34.75	-14.64	11.97	229.19
<i>BLOCKSHD</i>	2,661	20.23	11.31	2.77	12.01	18.20	26	59.77
<i>FAM</i>	2,661	0.62	0.49	0	0	1	1	1
<i>MB</i>	2,661	1.64	1.18	0.34	0.9	1.32	1.97	8.29
<i>FSIZE</i>	2,661	15.26	1.42	12.44	14.26	15.06	16.07	19.67

Note:

1. CCOMP is average total cash compensation of top managers in thousands of NT dollars.
2. Variable definitions are presented in Table 2.

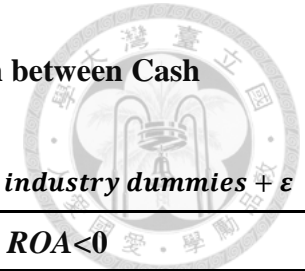


Table 12. Regression Results of Additional Analysis 1-1: Impacts of Compensation Committee Existence on Relation between Cash Compensation of Top Management and ROA

$$\ln(CCMP)_{it} = \beta_0 + \beta_{11}ROA_{it} + \beta_{12}CC_{it} + \beta_{13}CC_{it} * ROA_{it} + \beta_{14}RET_{it} + \beta_{15}BLOCKSHD_{it} + \beta_{16}FAM_{it} + \beta_{17}MB_{it} + \beta_{18}FSIZE_{it} + \text{industry dummies} + \varepsilon$$

Variable	Additional Analysis 1-1			ROA>0			ROA<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	4.7182***	0.000	?	4.6790***	0.000	?	4.3753***	0.000
<i>ROA</i>	+	0.0140***	0.000	+	0.0178***	0.000	+	0.0108	0.265
<i>CC</i>	-	0.0227	0.468	-	0.0408	0.325	-	-0.1435	0.149
<i>CC*ROA</i>	+	0.0024	0.301	+	0.0018	0.553	+	-0.0019	0.866
<i>RET</i>	+	-0.0003	0.413	+	0.0000	0.927	+	-0.0019**	0.041
<i>BLOCKSHD</i>	-	-0.0045***	0.000	-	-0.0044***	0.000	-	-0.0033	0.191
<i>FAM</i>	?	-0.0925***	0.000	?	-0.0814***	0.000	?	-0.2022***	0.003
<i>MB</i>	+	0.0283***	0.008	+	0.0190	0.153	+	0.0046	0.847
<i>FSIZE</i>	+	0.1923***	0.000	+	0.1929***	0.000	+	0.2143***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,661			2,370			291	
<i>Adjusted R²</i>		30.93%			28.23%			37.32%	
<i>F-Value</i>		36.04***			28.40***			7.17***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.

While the descriptive statistic and regression result of Additional Analysis 1-2 are presented in Table 10 and Table 13. The descriptive statistic result, except the variables, *ROA* and *CC*ROA*, is in line with Model 1 in 2010 & 2012. Table 13 indicates that there is no significant evidence that compensation committee would increase the association between *ROA* and compensation of top management ($\beta_{23}=-0.0002, p=0.931$; $\beta'_{23}=-0.0015, p=0.609$; $\beta''_{23}=-0.0085, p=0.416$). According to the result of Additional Analysis 1-1 and 1-2, there is no evidence that compensation committee has positive effect on pay-to-performance relation.

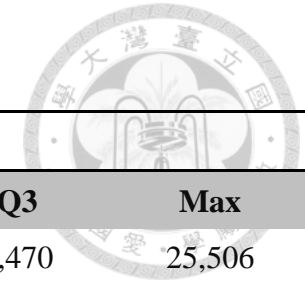


Table 10. Descriptive Statistics of Additional Analysis 1-2 (2010 & 2012)

Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>CCOMP</i>	2,657	2,951	2,148	14.67	1,748	2,444	3,470	25,506
<i>ln(CCOMP)</i>	2,657	7.80	0.62	2.69	7.47	7.80	8.15	10.15
<i>ROA</i>	2,657	9.00	8.90	-21.32	3.91	8.49	14.29	34.32
<i>CC</i>	2,657	0.51	0.50	0	0	1	1	1
<i>CC*ROA</i>	2,657	3.87	7.34	-21.32	0	0	7.28	32.55
<i>RET</i>	2,657	15.40	41.74	-53.98	-10.40	7.63	31.40	229.19
<i>BLOCKSHD</i>	2,657	20.33	11.18	2.77	12.08	18.30	26.28	57.36
<i>FAM</i>	2,657	0.62	0.49	0	0	1	1	1
<i>MB</i>	2,657	1.73	1.28	0.40	0.95	1.38	2.06	8.47
<i>FSIZE</i>	2,657	15.26	1.43	12.29	14.27	15.07	16.07	19.79

Note:

1. CCOMP is average total cash compensation of top managers in thousands of NT dollars.
2. Variable definitions are presented in Table 2.

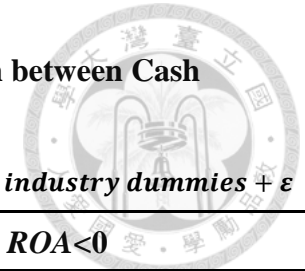
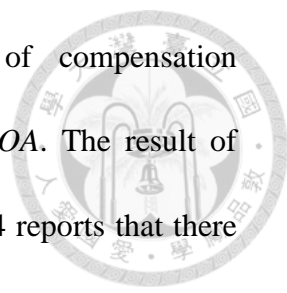


Table 13. Regression Results of Additional Analysis 1-2: Impacts of Compensation Committee Existence on Relation between Cash Compensation of Top Management and ROA

$$\ln(CCMP)_{it} = \beta_0 + \beta_{21}ROA_{it} + \beta_{22}CC_{it} + \beta_{23}CC_{it} * ROA_{it} + \beta_{24}RET_{it} + \beta_{25}BLOCKSHD_{it} + \beta_{26}FAM_{it} + \beta_{27}MB_{it} + \beta_{28}FSIZE_{it} + \text{industry dummies} + \varepsilon$$

Variable	Additional Analysis 1-2			ROA>0			ROA<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	4.7030***	0.000	?	4.6696***	0.000	?	4.5583***	0.000
<i>ROA</i>	+	0.0138***	0.000	+	0.0164***	0.000	+	0.0036	0.721
<i>CC</i>	-	0.0917***	0.002	-	0.1189***	0.003	-	-0.0945	0.323
<i>CC*ROA</i>	+	-0.0002	0.931	+	-0.0015	0.609	+	-0.0085	0.461
<i>RET</i>	+	-0.0006	0.030	+	-0.0004	0.144	+	-0.0014*	0.089
<i>BLOCKSHD</i>	-	-0.0047***	0.000	-	-0.0053***	0.000	-	-0.0013	0.615
<i>FAM</i>	?	-0.0956***	0.000	?	-0.1014***	0.000	?	-0.0759	0.260
<i>MB</i>	+	0.0372***	0.000	+	0.0377***	0.002	+	-0.0167	0.429
<i>FSIZE</i>	+	0.1951***	0.000	+	0.1975***	0.000	+	0.1912***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,657			2,335			322	
<i>Adjusted R²</i>		30.65%			28.76%			23.51%	
<i>F-Value</i>		35.52***			28.71***			4.40***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.



Additional Analysis 2 examines whether composition of compensation committee would influence the relation between *CCOMP* and *ROA*. The result of descriptive statistic is presented in Table 11 and Table 14. Table 14 reports that there is no significant evidence supporting the hypothesis that independent directors or directors with multiple directorships would increase or affect the compensation sensitivity. Rather, the result indicates that in firms with unfavorable performance, the participation of audit committee member increases pay-to-performance relation and supports Hypothesis 4. The evidence is partly consistent with Zheng and Cullinan (2010) and Hermanson et al. (2011) which indicated that common membership lead to knowledge spillover and therefore effective compensation committee. Results of other control variables are similar to that in Model 2.

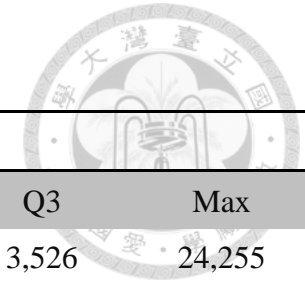


Table 11. Descriptive Statistics of Additional Analysis 2

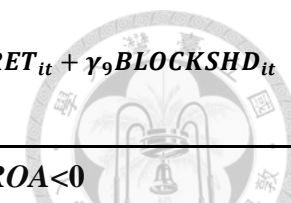
Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>CCOMP</i>	2,692	2,972	2,152	15	1,762	2,462	3,526	24,255
<i>ln(CCOMP)</i>	2,692	7.8075	0.6281	2.6856	7.4744	7.8085	8.1678	10.0964
<i>ROA</i>	2,692	8.1275	8.8440	-21.32	3.315	7.615	13.24	33.57
<i>ID</i>	2,692	0.5814	0.4934	0	0	1	1	1
<i>ID*ROA</i>	2,692	5.2157	8.4638	-21.32	0	0.155	10.21	33.57
<i>MultiDir</i>	2,692	0.1606	0.2371	0	0	0	0.3333	1
<i>MultiDir *ROA</i>	2,692	1.4510	3.3060	-14.2133	0	0	1.9654	33.55
<i>AC</i>	2,692	0.0583	0.2344	0	0	0	0	1
<i>AC*ROA</i>	2,692	0.5485	3.2105	-17.57	0	0	0	33.57
<i>RET</i>	2,692	-4.4472	38.3640	-73.5855	-32.2464	-7.6463	15.6278	159.8555
<i>BLOCKSHD</i>	2,692	20.6716	11.5485	2.89	12.26	18.615	26.57	59.77
<i>FAM</i>	2,692	0.6185	0.4858	0	0	1	1	1
<i>MB</i>	2,692	1.4224	1.1077	0.34	0.78	1.1	1.67	8.47
<i>FSIZE</i>	2,692	15.2763	1.4351	12.2913	14.2775	15.0778	16.1044	19.7854

Note:

1. CCOMP is average total cash compensation of top managers in thousands of NT dollars.
2. Variable definitions are presented in Table 2.

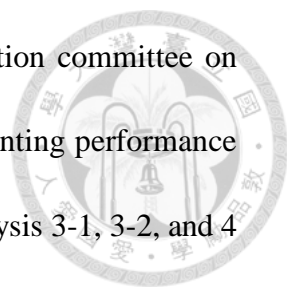
Table 14. Regression Results of Additional Analysis 2: Impacts of Composition of Compensation Committee on Relation between Cash Compensation of Top Management and ROA

$$\ln(CCMP)_{it} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 ID_{it} + \gamma_3 ID_{it} * ROA_{it} + \gamma_4 MultiDir_{it} + \gamma_5 MultiDir_{it} * ROA_{it} + \gamma_6 AC_{it} + \gamma_7 AC_{it} * ROA_{it} + \gamma_8 RET_{it} + \gamma_9 BLOCKSHD_{it} + \gamma_{10} FAM_{it} + \gamma_{11} MB_{it} + \gamma_{12} FSIZE_{it} + \text{industry dummies} + \varepsilon$$



Variable	Additional Analysis 2			ROA>0			ROA<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	4.8012***	0.000	?	4.8525***	0.000	?	3.7537***	0.000
<i>ROA</i>	+	0.0184***	0.000	+	0.0131***	0.000	+	0.0078	0.311
<i>ID</i>	-	0.0623	0.034	-	-0.0903**	0.027	-	0.1386	0.104
<i>ID*ROA</i>	+	-0.0081***	0.001	+	0.0037	0.263	+	-0.0152*	0.065
<i>MultiDir</i>	?	0.0389	0.530	?	0.0311	0.702	?	-0.0289	0.887
<i>MultiDir *ROA</i>	?	0.0029	0.545	?	0.0013	0.828	?	-0.0104	0.633
<i>AC</i>	?	0.0499	0.411	?	0.0790	0.324	?	0.3831**	0.037
<i>AC*ROA</i>	?	0.0060	0.145	?	0.0023	0.654	?	0.0429**	0.047
<i>RET</i>	+	0.0002	0.429	+	-0.0001	0.685	+	0.0008	0.258
<i>BLOCKSHD</i>	-	-0.0039***	0.000	-	-0.0049***	0.000	-	-0.0047**	0.042
<i>FAM</i>	?	-0.0954***	0.000	?	-0.0963***	0.000	?	-0.0545	0.378
<i>MB</i>	+	0.0045*	0.087	+	0.0423***	0.002	+	0.0013	0.657
<i>FSIZE</i>	+	0.1892***	0.000	+	0.1916***	0.000	+	0.2140***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,693			2,324			369	
<i>Adjusted R²</i>		33.28%			31.41%			42.86%	
<i>F-Value</i>		34.83***			27.54***			7.62***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.



In the following analyses, I examine the effect of compensation committee on association between cash bonus of top management and two accounting performance respectively---*ROE* and *ROA*. Alternatively stated, Additional Analysis 3-1, 3-2, and 4 examine the effect of existence of compensation committee on director compensation sensitivity to *ROE* or *ROA*; Additional Analysis 5-1, 5-2, and 6 test the impact of committee composition on director compensation sensitivity to *ROE* or *ROA*. As presented in Table 15, the observations in these analyses are not the same as those in previous analysis because of replacement for cash bonus. There are 2,099 observations in Analysis 3-1 (4-1) which examines the effect of compensation committee on relation between cash bonus and *ROE* (*ROA*) in the first implementation year; 2,100 observations are obtained in Analysis 3-2 (4-2) to test the effect of compensation committee in the second implementation year. In Analysis 5 & 6 respectively test the effect of the committee composition on relation between cash bonus and *ROE* or *ROA*, and 2,137 observations are obtained in these two analyses.

Table 15. Sampling Process of Additional Analysis for Cash Bonus

	Analysis 3 & 4	Analysis 5 & 6
Raw sample of listed firm on TSE and GTSM (Firm year)	4,398	2,933
Less: Firms from financial industry	132	88
Lack of compensation information	1,036	672
Lack of accounting performance information	0	0
Lack of market performance information	33	11
Lack of compensation committee information	17	17
Voluntarily set compensation committee ¹⁶	12	8
Final sample of listed firm on TSE and GTSM (Firm year)	3,168	2,137
Firm listed on TSE	1,821	1,226
2012	612	612
2011	614	614
2010	595	-
Firm listed on GTSM	1,347	911
2012	457	457
2011	454	454
2010	436	-
Additional Analysis 3-1 & 4-1 (2010 & 2011)	2,099	-
Additional Analysis 3-2 & 4-2 (2010 & 2012)	2,100	-

¹⁶ This paper focuses on the effect of mandatory compensation committee. Therefore, firms which voluntarily set compensation committee are not included in sample. There are four firms (2330 台積電、3293 鈹象、3527 聚積、3702 大聯大) setting compensation committee in board before the introduction of legislation of compensation committee.

The descriptive statistic results of Analysis 3-1 and 4-1 are showed in Table 16. Top managements are annually paid with 1,136,000 dollars for bonus in average. The regression results of the analyses for examining the effects of compensation committee on relation between cash bonus and *ROE (ROA)* are shown in Table 19 (21). The results of these two analyses are consistent. There is no evidence to support that in the first implementation year, compensation committee improves the association between director cash bonus and accounting performance, either *ROE* or *ROA*.

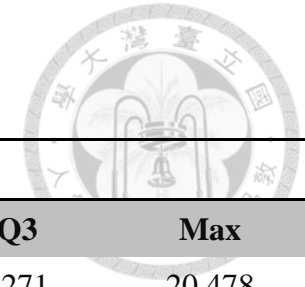


Table 16. Descriptive Statistics of Additional Analysis 3-1 & 4-1

Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>AverBonus</i>	2,099	1,136	1748	0.2857	271	600	1271	20,478
<i>ln(Bonus)</i>	2,099	6.32	1.3042	-1.2528	5.6003	6.3973	7.1472	9.9271
<i>ROE</i>	2,099	8.7728	12.7876	-45.34	2.59	9.13	15.9	46.4
<i>ROA</i>	2,099	10.0627	8.3038	-16.83	5.07	9.28	14.93	33.57
<i>CC</i>	2,099	0.5088	0.5000	0	0	1	1	1
<i>CC*ROE</i>	2,099	3.6325	9.9241	-45.34	0	0	7.71	41.71
<i>CC*ROA</i>	2,099	4.7035	7.5046	-16.83	0	0	8.76	33.57
<i>RET</i>	2,099	-6.0279	42.2041	-73.1931	-34.1989	-14.5856	11.4283	226.6996
<i>BLOCKSHD</i>	2,099	19.5648	10.6319	2.77	11.79	17.58	25.51	54.61
<i>FAM</i>	2,099	0.6160	0.4865	0	0	1	1	1
<i>MB</i>	2,099	1.6055	1.1067	0.35	0.9	1.32	1.93	7.93
<i>FSIZE</i>	2,099	15.3924	1.4078	12.9062	14.3697	15.1834	16.2057	19.7795

Note:

1. *ln(Bonus)* is average cash bonus of top management in thousands of NT dollars.
2. Variable definitions are presented in Table 2.



Table 19. Regression Results of Additional Analysis 3-1: Impacts of Compensation Committee Existence on Relation between Bonus Pay and ROE in the first implementation year

$$\ln(\text{Bonus})_{it} = \beta_0 + \beta_{11}\text{ROE}_{it} + \beta_{12}\text{CC}_{it} + \beta_{13}\text{CC}_{it} * \text{ROE}_{it} + \beta_{14}\text{RET}_{it} + \beta_{15}\text{BLOCKSHD}_{it} + \beta_{16}\text{FAM}_{it} + \beta_{17}\text{MB}_{it} + \beta_{18}\text{FSIZE}_{it} + \text{industry dummies} + \varepsilon$$

Variable	Additional Analysis 3-1			ROE>0			ROE<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	0.9124***	0.007	?	1.4910***	0.000	?	-1.6543*	0.054
<i>ROE</i>	+	0.0289***	0.000	+	0.0310***	0.000	+	0.0285***	0.006
<i>CC</i>	-	0.1848***	0.005	-	-0.0425	0.660	-	0.1733	0.398
<i>CC*ROE</i>	+	-0.0050	0.208	+	0.0098	0.111	+	-0.0169	0.159
<i>RET</i>	+	-0.0006	0.477	+	-0.0002	0.810	+	-0.0074***	0.006
<i>BLOCKSHD</i>	-	-0.0052**	0.035	-	-0.0059**	0.032	-	-0.0007	0.898
<i>FAM</i>	?	-0.2409***	0.000	?	-0.2429	0.000	?	-0.1425	0.304
<i>MB</i>	+	0.0565*	0.057	+	-0.0128	0.718	+	0.2915***	0.001
<i>FSIZE</i>	+	0.3253***	0.000	+	0.2967***	0.000	+	0.4549***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,099			1,768			331	
<i>Adjusted R²</i>		23.74%			19.53%			29.32%	
<i>F-Value</i>		20.21***			13.62***			5.56***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and *** correspond to 10%, 5%, and 1% significance levels, respectively.

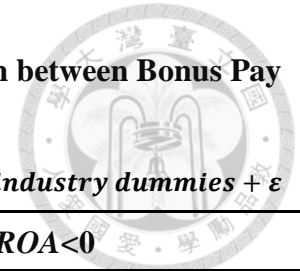


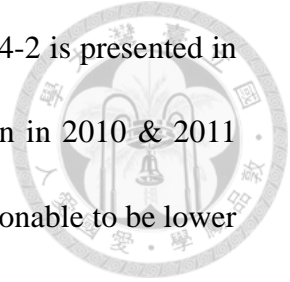
Table 21. Regression Results of Additional Analysis 4-1: Impacts of Compensation Committee Existence on Relation between Bonus Pay and ROA in the first implementation year

$$\ln(\text{Bonus})_{it} = \beta_0 + \beta_{11}\text{ROA}_{it} + \beta_{12}\text{CC}_{it} + \beta_{13}\text{CC}_{it} * \text{ROA}_{it} + \beta_{14}\text{RET}_{it} + \beta_{15}\text{BLOCKSHD}_{it} + \beta_{16}\text{FAM}_{it} + \beta_{17}\text{MB}_{it} + \beta_{18}\text{FSIZE}_{it} + \text{industry dummies} + \varepsilon$$

Variable	Additional Analysis 4-1			ROA>0			ROA<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	0.6998**	0.038	?	0.7750**	0.029	?	-1.2491	0.369
<i>ROA</i>	+	0.0341***	0.000	+	0.0391***	0.000	+	0.0456	0.217
<i>CC</i>	-	0.1556*	0.062	-	0.0746	0.469	-	-0.1766	0.571
<i>CC*ROA</i>	+	0.0000	0.997	+	0.0057	0.448	+	-0.0611	0.139
<i>RET</i>	+	0.0005	0.559	+	0.0006	0.436	+	-0.0040	0.213
<i>BLOCKSHD</i>	-	-0.0054**	0.028	-	-0.0051*	0.050	-	-0.0080	0.321
<i>FAM</i>	?	-0.2602***	0.000	?	-0.2746***	0.000	?	0.0200	0.926
<i>MB</i>	+	0.0659**	0.028	+	0.0303	0.371	+	0.1245	0.214
<i>FSIZE</i>	+	0.3361***	0.000	+	0.3307***	0.000	+	0.4798***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,099			1,929			170	
<i>Adjusted R²</i>		22.75%			20.99%			23.92%	
<i>F-Value</i>		19.17***			16.06***			3.04***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.

The descriptive statistic result of Additional Analysis 3-2 and 4-2 is presented in Table 17. The mean of *ROE* or *ROA* in 2010 & 2012 are less than in 2010 & 2011 (8.7728 vs. 7.6757; 10.0627 vs. 9.4661). And the cash bonus is reasonable to be lower in 2010 & 2012 than 2010 & 2011 (1,129 vs. 1,136). Table 20 and 22 indicate that compensation committee has no positive effect on relation between bonus and accounting performance in the second implementation year.



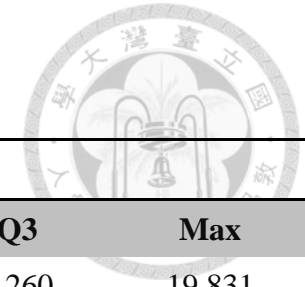


Table 17. Descriptive Statistics of Additional Analysis 3-2 & 4-2

Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>AverBonus</i>	2,100	1,129	1,727	0.4286	281.6667	601.4	1,260	19,831
<i>ln(Bonus)</i>	2,100	6.33	1.2784	-0.8473	5.6407	6.3993	7.1386	9.8950
<i>ROE</i>	2,100	7.6757	13.2836	-49.57	1.81	8.24	15.37	46.4
<i>ROA</i>	2,100	9.4661	8.4281	-16.27	4.395	8.765	14.355	33.2
<i>CC</i>	2,100	0.5090	0.5000	0	0	1	1	1
<i>CC*ROE</i>	2,100	2.5379	10.0093	-49.57	0	0	6.325	36.04
<i>CC*ROA</i>	2,100	4.1095	7.2128	-16.27	0	0	7.555	33.2
<i>RET</i>	2,100	15.1629	40.4601	-51.0279	-9.5876	7.8750	30.4528	226.6996
<i>BLOCKSHD</i>	2,100	19.8066	10.7093	2.77	11.865	17.84	25.75	55.15
<i>FAM</i>	2,100	0.6138	0.4870	0	0	1	1	1
<i>MB</i>	2,100	1.6828	1.1593	0.41	0.95	1.36	2.01	7.93
<i>FSIZE</i>	2,100	15.3937	1.4119	12.8642	14.3753	15.1879	16.1902	19.9010

Note:

1. *ln(Bonus)* is average cash bonus of top management in thousands of NT dollars.
2. Variable definitions are presented in Table 2.

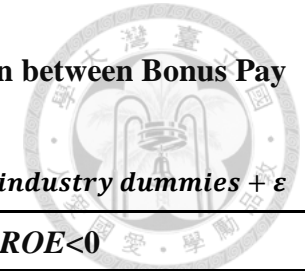


Table 20. Regression Results of Additional Analysis 3-2: Impacts of Compensation Committee Existence on Relation between Bonus Pay and ROE in the second implementation year

$$\ln(\text{Bonus})_{it} = \beta_0 + \beta_{21}\text{ROE}_{it} + \beta_{22}\text{CC}_{it} + \beta_{23}\text{CC}_{it} * \text{ROE}_{it} + \beta_{24}\text{RET}_{it} + \beta_{25}\text{BLOCKSHD}_{it} + \beta_{26}\text{FAM}_{it} + \beta_{27}\text{MB}_{it} + \beta_{28}\text{FSIZE}_{it} + \text{industry dummies} + \varepsilon$$

Variable	Additional Analysis 3-2			ROE>0			ROE<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	0.9612***	0.003	?	1.4340***	0.000	?	-1.2802	0.117
<i>ROE</i>	+	0.0283***	0.000	+	0.0280***	0.000	+	0.0253**	0.014
<i>CC</i>	-	0.2698***	0.000	-	0.0758	0.410	-	0.4528**	0.019
<i>CC*ROE</i>	+	-0.0047	0.212	+	0.0096	0.125	+	-0.0089	0.432
<i>RET</i>	+	-0.0009	0.185	+	-0.0007	0.329	+	-0.0041*	0.058
<i>BLOCKSHD</i>	-	-0.0094**	0.000	-	-0.0102***	0.000	-	-0.0039	0.476
<i>FAM</i>	?	-0.2431***	0.000	?	-0.2686***	0.000	?	-0.0879	0.490
<i>MB</i>	+	0.0802***	0.002	+	0.0379	0.236	+	0.2186***	0.003
<i>FSIZE</i>	+	0.3340***	0.000	+	0.3145***	0.000	+	0.4312***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,100			1,714			386	
<i>Adjusted R²</i>		26.55%			21.65%			27.07%	
<i>F-Value</i>		23.32***			14.92***			5.61***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and *** correspond to 10%, 5%, and 1% significance levels, respectively.

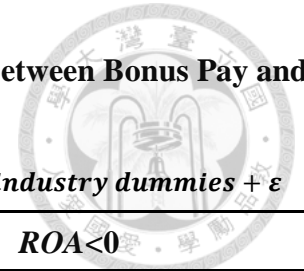
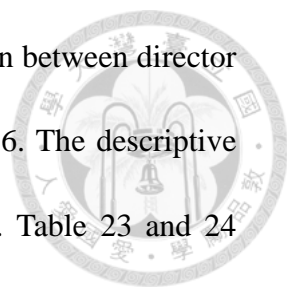


Table 22. Regression Results of Additional Analysis 4-2: Impacts of Compensation Committee Existence on Relation between Bonus Pay and ROA in the second implementation year

$$\ln(\text{Bonus})_{it} = \beta_0 + \beta_{21}\text{ROA}_{it} + \beta_{22}\text{CC}_{it} + \beta_{23}\text{CC}_{it} * \text{ROA}_{it} + \beta_{24}\text{RET}_{it} + \beta_{25}\text{BLOCKSHD}_{it} + \beta_{26}\text{FAM}_{it} + \beta_{27}\text{MB}_{it} + \beta_{28}\text{FSIZE}_{it} + \text{industry dummies} + \varepsilon$$

Variable	Additional Analysis 4-2			ROA>0			ROA<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	0.7804**	0.015	?	0.9055***	0.008	?	-1.3994	0.293
<i>ROA</i>	+	0.0338***	0.000	+	0.0347***	0.000	+	0.0496	0.176
<i>CC</i>	-	0.1585**	0.035	-	0.1736*	0.069	-	-0.3533	0.232
<i>CC*ROA</i>	+	0.0032	0.581	+	0.0024	0.740	+	-0.0625	0.132
<i>RET</i>	+	0.0000	0.967	+	0.0004	0.554	+	-0.0032	0.198
<i>BLOCKSHD</i>	-	-0.0091***	0.000	-	-0.0084***	0.001	-	-0.0081	0.278
<i>FAM</i>	?	-0.2647***	0.000	?	-0.2927***	0.000	?	0.0728	0.700
<i>MB</i>	+	0.0800***	0.003	+	0.0731*	0.071	+	0.0427	0.620
<i>FSIZE</i>	+	0.3417***	0.000	+	0.3354***	0.000	+	0.4721***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,100			1,885			215	
<i>Adjusted R²</i>		25.81%			22.38%			21.90%	
<i>F-Value</i>		22.47***			16.98***			3.07***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.



The effects of compensation committee composition on relation between director pay and *ROE* or *ROA* are examined in Additional Analysis 5 and 6. The descriptive statistic results of Analysis 5 and 6 are summarized in Table 18. Table 23 and 24 report that only in the firms with favorable performance the participation of independent directors on compensation committee is positive related to neither *ROE* nor *ROA* and cash bonus. On the other hand, the participation of director with multiple directorships only has positive effect on pay-to-performance relation in firms with favorable performance. The result is consistent with evidence in Model 2 and support to Hypothesis 3. While the audit committee member decreases the relation between cash bonus and *ROE*. The result is contrary to that of the prior analyses in this study.

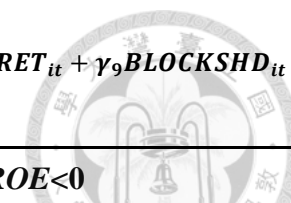
Table 18. Descriptive Statistics of Additional Analysis 5 & 6

Descriptive statistics								
<i>Variables</i>	N	Mean	SD	Min	Q1	Q2	Q3	Max
<i>Bonus</i>	2,137	1,143	1,727	0.2857	293	605	1,282	20,478
<i>ln(Bonus)</i>	2,137	6.3506	1.2858	-1.2528	5.6802	6.4056	7.1561	9.9271
<i>ROE</i>	2,137	6.0618	13.3313	-49.57	0.9	6.74	13.51	41.71
<i>ROA</i>	2,137	8.6583	8.3537	-16.83	3.92	8.01	13.41	33.57
<i>ID</i>	2,137	0.5934	0.4913	0	0	1	1	1
<i>ID*ROE</i>	2,137	3.6890	11.5597	-49.57	0	0	9.73	41.71
<i>ID*ROA</i>	2,137	5.5765	8.3537	-16.83	0	1.67	10.75	33.57
<i>MultiDir</i>	2,137	0.1697	0.2428	0	0	0	0.3333	1
<i>MultiDir*ROE</i>	2,137	1.1030	4.1144	-30.2267	0	0	1.3267	30.59
<i>MultiDir *ROA</i>	2,137	1.5876	3.3978	-11.39	0	0	2.3267	33.2
<i>AC</i>	2,137	0.0622	0.2416	0	0	0	0	1
<i>AC*ROE</i>	2,137	0.3480	4.0381	-42.68	0	0	0	41.71
<i>AC*ROA</i>	2,137	0.5891	3.3681	-16.83	0	0	0	33.57
<i>RET</i>	2,137	-4.4386	36.3855	-73.1931	-30.9432	-6.69	15.3718	156.461
<i>BLOCKSHD</i>	2,137	10.0423	10.9743	2.9	12.08	18	25.85	55.15
<i>FAM</i>	2,137	0.6102	0.4878	0	0	1	1	1
<i>MB</i>	2,137	1.3692	0.9719	0.35	0.78	1.08	1.61	6.88
<i>FSIZE</i>	2,137	15.4140	1.4187	12.8642	14.3939	15.2160	16.2066	19.9010

Note: 1.DCCOMP is average total cash compensation of directors in thousands of NT dollars. 2. Variable definitions are presented in Table 2.

Table 23. Regression Results of Additional Analysis 5: Impacts of Composition of Compensation Committee on Relation between Directors Pay and ROE

$$\ln(DCCOMP)_{it} = \gamma_0 + \gamma_1 ROE_{it} + \gamma_2 ID_{it} + \gamma_3 ID_{it} * ROE_{it} + \gamma_4 MultiDir_{it} + \gamma_5 MultiDir_{it} * ROE_{it} + \gamma_6 AC_{it} + \gamma_7 AC_{it} * ROE_{it} + \gamma_8 RET_{it} + \gamma_9 BLOCKSHD_{it} + \gamma_{10} FAM_{it} + \gamma_{11} MB_{it} + \gamma_{12} FSIZE_{it} + \text{industry dummies} + \varepsilon$$

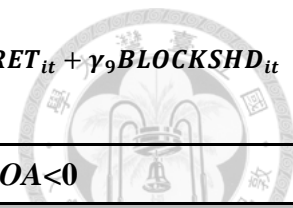


Variable	Additional Analysis 5			ROE>0			ROE<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
Intercept	?	1.2050***	0.000	?	1.7685***	0.000	?	-1.4259	0.048
ROE	+	0.0202***	0.000	+	0.0235***	0.000	+	0.0167*	0.055
ID	-	-0.0545	0.373	-	-0.1692*	0.085	-	0.0873	0.592
ID*ROE	+	0.0012	0.778	+	0.0096	0.182	+	-0.0017	0.857
MultiDir	?	0.0527	0.652	?	-0.1850	0.346	?	-0.2271	0.462
MultiDir*ROE	?	0.0063	0.424	?	0.0291**	0.036	?	-0.0225	0.234
AC	?	0.3202***	0.005	?	0.4543**	0.027	?	0.4274	0.162
AC*ROE	?	-0.0155**	0.024	?	-0.0204	0.126	?	-0.0031	0.850
RET	+	0.0004	0.634	+	0.0005	0.514	+	-0.0002	0.906
BLOCKSHD	-	-0.0084***	0.000	-	-0.0080***	0.003	-	-0.0061	0.180
FAM	?	-0.2165***	0.000	?	-0.2573***	0.000	?	-0.0235	0.829
MB	+	0.1548***	0.000	+	0.0821*	0.056	+	0.1865**	0.033
FSIZE	+	0.3223***	0.000	+	0.2934***	0.000	+	0.4603***	0.000
Industry dummy		Included			Included			Included	
Sample Size		2,137			1,682			455	
Adjusted R²		24.91%			21.27%			30.63%	
F-Value		19.65***			12.95***			6.73***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.

Table 24. Regression Results of Additional Analysis 6: Impacts of Composition of Compensation Committee on Relation between Directors Pay and ROA

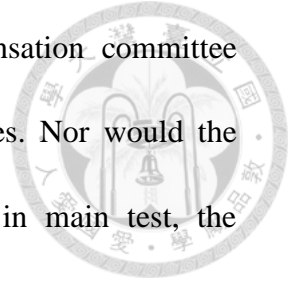
$$\ln(DCCOMP)_{it} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 ID_{it} + \gamma_3 ID_{it} * ROA_{it} + \gamma_4 MultiDir_{it} + \gamma_5 MultiDir_{it} * ROA_{it} + \gamma_6 AC_{it} + \gamma_7 AC_{it} * ROA_{it} + \gamma_8 RET_{it} + \gamma_9 BLOCKSHD_{it} + \gamma_{10} FAM_{it} + \gamma_{11} MB_{it} + \gamma_{12} FSIZE_{it} + \text{industry dummies} + \varepsilon$$



Variable	Additional Analysis 6			ROA>0			ROA<0		
	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p	Predicted Sign	Coefficient	p
<i>Intercept</i>	?	0.9962***	0.002	?	1.1945***	0.001	?	-2.1857*	0.068
<i>ROA</i>	+	0.0407***	0.000	+	0.0401***	0.000	+	0.0221	0.497
<i>ID</i>	-	-0.0052	0.947	-	-0.0215	0.833	-	-0.1010	0.688
<i>ID*ROA</i>	+	-0.0071	0.288	+	-0.0055	0.511	+	-0.0389	0.275
<i>MultiDir</i>	?	0.1659	0.279	?	0.0662	0.732	?	0.1553	0.787
<i>MultiDir*ROA</i>	?	-0.0107	0.373	?	-0.0020	0.893	?	-0.0488	0.532
<i>AC</i>	?	0.3915***	0.007	?	0.4406	0.032	?	0.3665	0.393
<i>AC*ROA</i>	?	-0.0166	0.115	?	-0.0193	0.177	?	0.0193	0.707
<i>RET</i>	+	0.0007	0.349	+	0.0013	0.100	+	-0.0022	0.308
<i>BLOCKSHD</i>	-	-0.0086***	0.000	-	-0.0060**	0.016	-	-0.0233***	0.001
<i>FAM</i>	?	-0.2346***	0.000	?	-0.2641***	0.000	?	0.1621	0.327
<i>MB</i>	+	0.1404***	0.000	+	0.1208	0.002	+	0.1135	0.263
<i>FSIZE</i>	+	0.3250***	0.000	+	0.3147***	0.000	+	0.4895***	0.000
<i>Industry dummy</i>		Included			Included			Included	
<i>Sample Size</i>		2,137			1,898			239	
<i>Adjusted R²</i>		24.92%			21.41%			30.94%	
<i>F-Value</i>		19.66***			14.60***			4.23***	

Note: 1. Variable definitions are presented in Table 2. 2. *, **, and*** correspond to 10%, 5%, and 1% significance levels, respectively.

Conclusively, there is no evidence to support that compensation committee would improve compensation sensitivity in all additional analyses. Nor would the participation of independent director. In line with the finding in main test, the presence of director with multiple directorships increase pay-performance relation. Additionally, the evidence of common membership between compensation and audit committee is mixing.



6. Conclusions, Contribution, and Limitations



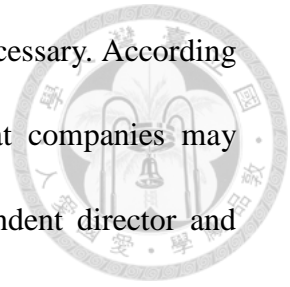
6.1. Conclusions

Given the world-wide problem of insensitive compensation in both U.S. and domestic companies, companies in Taiwan are compelled to set compensation committee in their board before 2012. Little research provides empirical evidence of the effect of mandatory compensation committee on pay-to-performance relation in Taiwan firms. The purpose of this paper is trying to present evidence of the recently introduced regulation and answer two principal research questions: (1) Does compensation committee increase compensation sensitivity? (2) Does composition of compensation committee affect compensation sensitivity?

Using 4,005 firm-years of Taiwanese listed firm from 2010 to 2012 as sample, I find no evidence that compensation committee increases pay-to-performance relation. However, I find that composition of compensation committee affects pay-to-performance in two respects, independence and multiple directorships. Participation of independent directors in compensation committee is positively related to pay-to-performance relation only in companies with favorable performance, while the proportion of directors with multiple directorships serving on compensation committee is positively related to compensation committee quality in all firms.

Even though the positive effect of compensation committee is not significant in the analyses of this study, the introduction of compensation committee is an important facet of corporate governance in Taiwanese firms. To deal with the problem of insensitivity compensation, especially those with unfavorable performance,

improvement for more effective compensation committee is still necessary. According to the finding from additional analyses, this study suggests that companies may improve the quality of monitoring mechanism by setting independent director and directors with multiple directorships on compensation committee.



6.2. Contribution

This study contributes to the corporate governance literature in the following ways. First of all, this research provides Taiwan evidence on the effect of corporate governance reforms of mandatory compensation committee. There is little evidence about compensation committee in Taiwanese firms because compensation committee is introduced in Taiwan in recent years. After controlling firm specific characteristics which are also used in previous research and special feature of Taiwanese firms, the evidence allows an international comparison and evaluation of other existing research.

Second, the analysis in this paper provides evidence of statistical links between the existence and composition of compensation committee with pay-to-performance relation. The evidence can be a reassessment of the regulation of mandatory compensation committee. Some research commented that authority could encourage rather than compel firms to set compensation committees. Even the compensation committee has significantly positive effect on pay-to-performance relations, the composition of compensation committee is found to improve the compensation sensitivity through independence and experience.

Furthermore, the evidence of composition of compensation committee provides

the direction of further regulation development. The independent directors serving on the compensation committee of firms with favorable performance lead to increase in committee quality. But in firms with unfavorable performance, the participation of independent director is not related to compensation committee quality. The result indicates that increase in the independence of compensation committee is a solution to improve quality of committees.

On the other side, the participation of director with multiple directorships significantly increases compensation committee quality in all firms. It implies that in the initial period of compensation committee introduction, the expert of this field is insufficient. The directors with multiple directorships would bring experience and expertise into committee and therefore improve committee quality. Hence, it is not suggested to regulate for limiting number of directorship now.

6.3. Limitations

This study examines the relation between compensation committee, performance, and compensation. The primary limitation of this study is insufficient information, including compensation and other firm characteristics. The value of equity-based compensation is not compulsorily disclosed in annual report of Taiwan companies. It leads to inability to observe the whole managements' compensation package. Thus, this study employs the total of salary and cash bonus only as compensation variable.

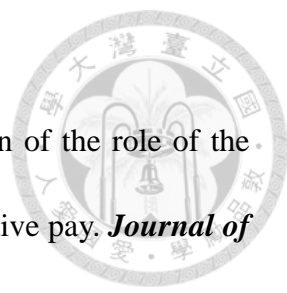
Not only the information of equity-based pay but also the information of individual compensation is necessary. For example, O'Reilly et al. (1988) and Conyon and He (2004) examined the effect of compensation of committee member on

CEO compensation and found that it has positive relation. Because the cash compensation is disclosed as the summation of all managements or all executives in Taiwanese firms, the information of compensation of specific management or executive is unavailable. And the effect of compensation of specific management is not controlled in this paper.

Moreover, some information of corporate governance characteristics is not available, such as the tenure and the shareholding of CEO/compensation committee member. If information listed above is available, the research in Taiwan of corporate governance would be more persuasive.

In addition, some features of compensation committee are not examined in my analyses because of the similarity in all committees. For example, previous research have investigated that firm size affects committee quality. There are about 96% and 83% compensation committees having three members in compensation committee in 2011 and 2012. The identical characteristic is not relevant to committee quality. Therefore, it is not examined in my analyses and could be quality determinant tested in further evidence.

References

- 
- Anderson, R. C., and Bizjak, J. M. 2003. An empirical examination of the role of the CEO and the compensation committee in structuring executive pay. *Journal of Banking and Finance* 27 (7): 1323–1348.
- Baker, G. P., Jensen, M. C., and Murphy, K. J. 1988. Compensation and incentives: practice vs. theory. *The Journal of Finance* 43 (3): 593-616
- Boyle, G., and Roberts, H. 2012. CEO presence on the compensation committee: a puzzle. *Journal of Economics and Business Press*
- Chalevas, C. G. 2011. The effect of the mandatory adoption of corporate governance mechanisms on executive compensation. *The International Journal of Accounting* 46 (2): 138-174.
- Cheng, S., and Firth, M. 2006. Family ownership, corporate governance and top executive compensation. *Managerial and Decision Economics* 27 (7): 549-561
- Conyon, M. J., and Peck, S. I. 1998. Board control, remuneration committees, and top management compensation. *Academy of Management Journal*, 41 (2) 146-157
- , and He, L. 2004. Compensation committees and CEO compensation incentives in U.S. Entrepreneurial Firms. *The Journal of Management Accounting Research* 16 (1): 35-56
- Core, J. E., Holthausen R. W., and Larcker, D. F. 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial*

Economics 51 (3): 371-406.

Coughlan, A. T., and Schmidt, R. M. 1985. Executive compensation, management turnover, and firm performance. *Journal of Accounting and Economics* 7 (1-3): 43-66

Dai, M. S., 2011. Organization and authority of compensation committee. *TWSE Monthly Review* 585 (01): 31-55

Daily, C. M., Johnson, J. L., Ellstrand A. E., and Dalton D. R. 1998. Compensation committee composition as a determinant of CEO compensation. *Academy of Management Journal* 41 (2): 209-220

Dechow, P. M., Huson, M. R., and Sloan, R. G. 1994. The effect of restructuring charges on executives' cash compensation. *The Accounting Review* 69 (1): 138-156


Ezzamel, M., and Watson, R. 1998. Market comparison earnings and the bidding-up of executive cash compensation: Evidence from the United Kingdom. *Academy of Management Journal* 41 (2): 221-231

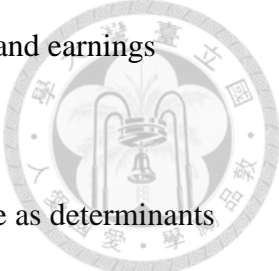
Ferris, S. P., Jagannathan, M., and Pritchard, A. C. 2003. Too busy to mind the business? Monitoring by directors with multiple board appointments. *The Journal of Finance* 58 (3): 1087-1112

Fich, E. M., and Shivdasani, A. 2006. Are busy boards effective monitors? *The Journal of Finance* 61 (2): 789-724

Finkelstein, S., and Hambrick, D. C. 1989. Chief executive compensation: a study of the intersection of markets and political processes. *Strategic Management Journal* 10 (2): 121-134



- 
- Hambrick, D. C., and Finkelstein, S. 1995. The effects of ownership structure on conditions at the top: the case of CEO pay raises. *Strategic Management Journal* 16 (3): 175-193
- Hermanson, D. R., Tompkins, J. G., Veliyath, R., and YE, Z. 2011. The Compensation Committee Process. *Contemporary Accounting Research* 29 (3): 666-709
- Huang, J. C., Chu, M. C., Chang, T. H., and Chen, Y. W. 2013. A study on operation performance interaction analysis with share-holding variation between director and majority shareholder. *2013 International Conference on the Development and Practice of Enterprise Resource Management*
- Jensen, M. C., and Meckling, W. 1976. Theory of the firm: managerial behavior, agency costs, and ownership. *Journal of Financial Economics* 3 (4): 305-360
- , and Murphy, K. J. 1990. Performance pay and top management incentives. *Journal of Political Economy* 98 (2): 225-264
- Jiraporn, P., Singh, M., and Lee, C. I. 2009. Ineffective corporate governance: director busyness and board committee memberships. *Journal of Banking & Finance* 33 (5): 819-828
- Kat, A. 2009. Obama top recipient of AIG's hefty campaign contributions. March 30. Available at: <http://www.publicintegrity.org/2009/03/30/2911/obama-top-recipient-aigs-hefty-campaign-contributions>
- Lambert, R. A., and Larcker, D. F. 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25 (Supplement)

- 
- Laux, C., and Laux, V. 2009. Board committees, CEO compensation and earnings management. *The accounting review* 84 (3): 869-891
- Lee, S. P., and Chen, H. J. 2011. Corporate governance and firm value as determinants of CEO compensation in Taiwan. *Management Research Review* 34 (3): 252-265
- Leone, A. J., Wu J. S., and Zimmerman, J. L. 2006. Asymmetric sensitivity of CEO cash compensation to stock returns. *Journal of Accounting and Economic* 42 (1-2): 167-192
- Liao, C. H., and Hsu, A. W. 2013. Common membership and effective corporate governance: evidence from audit and compensation committee. *Corporate Governance: An International Review* 21 (1): 79-92
- Liao, Y. C. 2013. Introduction of compensation committee in domestic firms: an overview of current status. *Money Watching & Credit Rating* 102 (01): 57-64
- Lin, Y. F. 2005. Corporate governance, leadership structure and CEO compensation: evidence from Taiwan. *Corporate Governance: An International Review* 13 (6): 824-835
- Main, B. G. M., and Johnston, J. 1993. Remuneration committees and corporate governance. *Accounting and Business Research* 23 (91): 351-362
- Mehran, H. 1995. Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics* 38 (2): 163-184
- Murphy, K. J. 1985. Corporate performance and managerial remuneration: An empirical analysis. *Journal of Accounting and Economics* 7 (1-3): 11-42

Newman, H. A., and Mozes, H. A. 1999. Does the composition of the compensation committee influence CEO compensation practices? *Financial Management* 28 (3): 41-53



O'Reilly, C. A., Main, B. G., and Crystal, G. S. 1988. CEO compensation as tournament and social comparison: a tale of two theories. *Administrative Science Quarterly* 33 (2): 257-274

Shivdasani, A. 1993. Board composition, ownership structure, and hostile takeovers. *Journal of Accounting and Economics* 16 (1-3): 167-198

Sloan, R. G. 1993. Accounting earnings and top executive compensation. *Journal of Accounting and Economics* 16 (1-3): 55-100

Smith, C. W., and Watts, R. L. 1992. The investment opportunity set and corporate financing, dividend, and compensation policy. *Journal of Financial Economics* 32 (3): 263-292

Sun, J., and Cahan, S. 2009. The effect of compensation committee quality on the association between CEO cash compensation and accounting performance. *Corporate Governance: An International Review* 17 (2): 193-207

Teng, Y. M., and Lee, H. L. 2012. The functions and operation model of compensation committee: analysis on Section 14-6 of Securities Exchange Act. *Chaoyang Business and Management Review* 11 (1): 69-85

Vafeas, N. 2003. Further evidence on compensation committee composition as a determinant of CEO compensation. *Financial Management* 32 (2): 53-70

Williamson, O. E. 1985. *The Economic Institutions of Capitalism*. New York: Free Press

Yeh, Y. H., Lee, T. S., and Woidtke, T. 2001. Family control and corporate governance: evidence from Taiwan. *International Review of Finance* 2 (1-2): 21-48

Zheng, X., and Cullinan, C. 2010. Compensation/ audit committee overlap and the design of compensation systems. *International Journal of Disclosure and Governance* 7: 136-15

