Article

Functions of Directors' and Officers' (D&O) Liability Insurance and Litigation Risk: An Empirical Legal Study of Taiwan

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ABSTRACT

This paper empirically analyzes the functions of directors' and officers' (D&O) liability insurance in corporate governance in Taiwan, it also reexamines the fundamental issue on the litigation risk of directors and officers. This research argues that litigation risk of directors, which is critically related to the fundamental function of insurance about indemnity, should be clarified before any legal revolution. This papers starts with examining whether the demand and functions of D&O insurance are influenced by directors' and officers' litigation risk. The monitoring hypothesis suggests that firms with weak corporate governance have a greater incentive to purchase D&O insurance. However, after empirically examining D&O insurance purchases and relevant litigations in Taiwan from 2008 to 2014, it is found that the monitoring hypothesis is not supported. The second part of this research moves on to detailed empirical test of signal hypothesis of D&O insurance and finds that it is supported. Considering risking behavior after insurance purchase may affect the functions of insurance, the third part analyzes possible opportunistic behavior caused by D&O insurance. It is found that the evidence about opportunistic behavior is not significant. Based on these findings, the paper further

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argues and concludes that D&O insurance should not be compulsory and legally capped in Taiwan.

Keywords: *D&O Insurance, Corporate Governance, Monitoring Hypothesis, Signal Hypothesis, Ohlson Model, Opportunistic Behavior, Moral Hazard*

CONTENTS

I. INTRODUCTION

A. *Research Background*

Generally, directors' and officers' (D&O) liability insurance is "an agreement to indemnify corporate directors and officers against judgments, settlements, and fines arising from negligence suits, shareholder actions, and other business-related lawsuits"[1] D&O insurance is a type of liability insurance whose primary purpose is to compensate the losses experienced by directors and officers when specific legal liabilities arise. D&O insurance may also serve the function of monitoring the governance of companies. For example, when underwriting is in progress, insurers may examine the financial status of insured companies, which will allow outside investors to understand more about the financial situation of company. D&O insurance can both transfer risk and offer incentives for insured companies to improve their corporate governance. After the problems experienced by Enron, Worldcom and other companies in various financial crises, the monitoring function of D&O insurance has been discussed more frequently, particularly in common law. Given this tendency,[2] discussions of this issue have become more popular in Taiwan.[3] Many proponents even argue that D&O insurance should be more promoted or mandated.

Exploring this issue in Taiwan should be meaningful and worthwhile, because of its special background and relationship to the D&O insurance issue. Taiwan primarily follows a civil law tradition,[4] but private laws of it are also affected by common law.[5] D&O insurance was originated in, and was developed in, common law countries, including the United Kingdom,

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1. BLACK'S LAW DICTIONARY (Bryan A. Garner & Henry Campbell Black eds., 10th ed. 2014). However, D&O insurance usually is not allowed to pay for fines because of legal violations, such as penalties, taxes and expenses of correction. John A. Edie, *Directors and Officers Liability Issues: An Update on D&O Insurance*, 2003 WL 22002122 (2003).

2. After Enron and WorldCom scandals, reforms of the Sarbanes-Oxley and New York Stock Exchange Listing standards, the 1997-98 financial crisis in Asia had a similar effect on Taiwan. Ronald J. Gilson & Curtis J. Milhaupt, *Choice as Regulatory Reform: The Case of Japanese Corporate Governance*, 53 AM. J. COMP. L. 343, 343 (2005). More discussion about financial crisis in Taiwan, *see* Lawrence L. C. Lee, *Taiwan's Current Banking Development Strategy: Preparing for Internationalization by Preventing Insider Lending*, 17 UCLA PAC. BASIN L.J. 166, 206 (Fall 1999/Spring 2000).

3. This can be found by prospering relevant researches, such as: Chen Tsai-Jyh (陳彩稚) & Pang Chia-Hui (龐嘉惠), *Dongjianshi Ji Zhongyao Zhiyuan Zeren Baoxian Zhi Xuqiu Yinsu Fenxi* (*董監事暨重要職員責任之保險需求因素分析*) [*An Analysis of Determinants of the Corporate Demand for Directors' and Officers' Liability Insurance*], 18 TAIDA GUANLI LUNCONG (臺大管理論叢) [NTU MGMT. REV.] 171, 171 (2008).

4. Michael M. Hickman, *Protecting Intellectual Property in Taiwan-Non-Recognized United States Corporations and Their Treaty Right of Access to Courts*, 60 WASH. L. REV. 117, 119 (1984).

5. Andrew Jen-Guang Lin, *Common Law Influences in Private Law-Taiwan's Experiences Related to Corporate Law*, 4 NAT'L TAIWAN U. L. REV. 107, 132 (2009).

the United States and Canada. The general development of the insurance industry in Taiwan therefore is significant. The percentage of listed companies that purchase D&O insurance is approximately 60% to date.[6] According to the articles of incorporation or resolution adopted in the shareholders' meeting, a TSEC/GTSM listed corporation may take out liability insurance for directors with respect to their liabilities resulting from exercising their duties during their terms of occupancy.[7] It is important to observe the development of D&O insurance and its monitoring function with respect to the background of Taiwan.

This study attempts to analyze the role of D&O insurance in corporate governance in Taiwan. This paper proposes that the purchase of D&O insurance is roughly and positively related to the corporate governance of insured companies in Taiwan. Even given that the industry is not as well developed as it is in the case of the United States, the positive relationship still can be observed. Conversely, the reason why a difference exists between Taiwan and the United States can be explained by the attributes of the conditions in Taiwan, such as the design of corporate governance structures, the prevalence of D&O insurance, the development of the litigation system and so on. In addition to the rejection of monitoring hypothesis, the signal hypothesis that D&O insurance can emit positive signal is proposed and tested in this study. By a series of empirical tests, sufficient evidence will be offered to establish signal theory.

B. *Research Process*

This study begins with an introduction of the research background, hypothesis development, and methodology. In the following paragraphs, rival theories regarding the purpose of director and officer insurance are introduced and discussed. Previous literature concerning D&O insurance and corporate governance will be reviewed, and arguments for and against it will be presented. Then, this study will develop an alternative hypothesis to the monitoring hypothesis, which is a signal hypothesis. Afterwards, a series of empirical tests will be carried out to examine the monitoring hypothesis and the signal hypothesis. Because the monitoring function of D&O insurance may be affected by exogenous factors, like moral hazard and opportunistic behavior, this study will thus clarify these concerns after the test for the monitoring hypothesis. This research proposes that there is no moral hazard problem in the Taiwanese market. Hence, D&O insurance does not imply the

6. Detailed information, *see infra* Table 2.

7. Shangshi Shanggui Gongsi Zhili Shiwu Shouze (上市上櫃公司治理實務守則) [Corporate Governance Best-Practice Principles for TSEC/GTSM Listed Companies] § 39 (promulgated by Taiwan Stock Exchange, Oct. 4, 2002, effective Oct. 6, 2002) (Taiwan).

problem of opportunism and moral hazard, and the reasoning of the monitoring function would not be affected. In conclusion, this study will explore theories of D&O insurance and structures of corporate governance in Taiwan in detail. The monitoring and signal hypotheses will be developed by examining the differences between the United States and Taiwan, reviewing relevant literature and conducting analyses using a comparative viewpoint. This study will then test the proposed hypotheses by theoretical and empirical methods bringing forward optimal suggestions for D&O insurance and corporate governance systems in Taiwan.

C. *Empirical Methodology*

This study will collect empirical data of D&O insurance and corporate governance in Taiwan, and test the proposed hypotheses by empirical methods. The data used in this study is obtained from databases or websites below: Taiwan Economic Journal (TEJ),[8] Taiwan Stock Exchange Corp.,[9] Market Observation Post System (MOPS), [10] Financial Supervisory Commission, Executive Yuan, R.O.C.,[11] Taiwan Insurance Institute,[12] and Securities and Futures Investors Protection Center. [13] This study will empirically analyze the purchase of D&O insurance by public companies in Taiwan during 2008 to 2014. Data about all public companies will be collected. Relevant arguments discussed in this research include whether or not the purchase of D&O insurance is positively related to the corporate governance of the insured companies, and whether D&O insurance have monitoring or signaling effect or not. A series of empirical works will be processed to test these hypotheses. Finally, this study will synthesize the results of these methods and propose legal suggestions.

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8. TAIWAN ECON. J. CO. LTD., http://www.finasia.biz/ensite/ (last visited Aug. 31, 2016).

9. TAIWAN ZHENGQUAN JIAOYISUO (臺灣證券交易所) [TAIWAN STOCK EXCHANGE CORP.], http://www.twse.com.tw/ch/index.php (last visited Aug. 31, 2016).

10. MKT. OBSERVATION POST SYS., http://emops.twse.com.tw/server-java/t58query (last visited Mar. 2, 2017).

11. JINRONG JIANDU GUANLI WEIYUANHUI (金融監督管理委員會) [FIN. SUPERVISORY COMMISSION], http://www.fsc.gov.tw/ch/index.jsp (last visited Aug. 31, 2016).

12. CAITUAN FAREN BAOXIAN SHIYE FAZHAN ZHONGXIN (財團法人保險事業發展中心) [TAIWAN INS. INST.], http://www.tii.org.tw/ (last visited Aug. 31, 2016).

13. SEC. & FUTURES INV. PROTECTION CTR., http://www.sfipc.org.tw/MainWeb/Index.aspx?L=2 (last visited Aug. 31, 2016).

II. MONITORING EFFECT OF D&O INSURANCE, CORPORATE GOVERNANCE, AND LITIGATION RISK

A. *Rival Theories of the Purpose of Director & Officer Insurance*

1. *Monitoring Hypothesis: Positive Arguments*

In 1990, Clifford G. Holderness pioneered research on D&O insurance and corporate governance. He has several important findings and arguments. First, ownership structure of a corporation has an impact on its performance and corporate governance. Because of more significant segregation between ownership and management, there are fewer agency conflicts for those corporations which have D&O insurance.[14] He proposed that insurers provide an external monitoring function of boards of directors and officers. This so-called "monitoring hypothesis" is supported by the results of his empirical research.[15] This monitoring hypothesis significantly affected many subsequent studies.

In sum, Clifford G. Holderness proposes that the monitoring function of D&O insurance has three dimensions.[16] First, before a policy is issued, the insurer will investigate the factors that affect exposure. This information is critical for the determination of premiums. Corporate governance issues of the insured affect both the potential legal risks of the insured and the indemnification liability of the insurer. In addition, the monitoring function is also revealed in policy coverage, and the conditions and duration of litigation.[17] Given the possibility of being forced to pay compensation, insurers have substantial incentives to monitor the status of the insured and prevent the occurrence of losses. Therefore, the corporate governance of the insured will be monitored.

Besides, the duties of directors[18] are always emphasized, while proper risk management method for directors should not be ignored.[19] Otherwise, directors might manage businesses in a conservative way to avoid potential

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14. Clifford G. Holderness, *Liability Insurers as Corporate Monitors*, 10 INT'L REV. L. & ECON. 115, 127 (1990).

15. *Id*. at 129.

16. *Id*. at 118-20.

17. *Id*. at 119-20.

18. Fiduciary duty can be divided in to two main branches--the duty of loyalty and the duty of care. The duty of loyalty is primarily a negative duty not to harm the principal. The duty of care is positive--a duty to promote the ends of the principal. Arthur B. Laby, *Resolving Conflicts of Duty in Fiduciary Relationships*, 54 AM. U. L. REV. 75, 78 (2004). More discussion, *see* Alan R. Palmiter, *Reshaping the Corporate Fiduciary Model: A Director's Duty of Independence*, 67 TEX. L. REV. 1351, 1353 (1989).

19. IAN YOUNGMAN, DIRECTORS' AND OFFICERS' LIABILITY INSURANCE: A GUIDE TO INTERNATIONAL PRACTICE 3 (1999).

liability, or restrain from taking the position out of fear. D&O insurance can both relieve the risks faced by boards of directors and encourage them to manage corporations in an active manner. Moreover, good corporate governance contributes to lowering the premiums needed to maintain D&O insurance.[20] D&O liability insurance can provide incentive for good corporate governance. George Kalchev confirms that insurance can mitigate the risk of bankruptcy, and firms with higher returns demand less insurance.[21] M. Martin Boyer even suggests that D&O insurance protects the wealth of shareholders to a greater extent than is the case for boards of directors.[22]

The monitoring hypothesis has also discussed and tested in jurisdictions other than the United States. In 1997, Noel O'Sullivan empirically tested Holderness's monitoring hypothesis in the United Kingdom. Noel O'Sullivan sampled 366 companies. He examined the relationship between purchases of D&O liability insurance and board composition, managerial ownership, and external shareholder control. His research supported the monitoring hypothesis.[23] John E. Core gathered data from Canadian firms, and examined the factors that determine firms' demand for D&O insurance. He found that companies that face greater litigation risks are more likely to purchase insurance and to carry higher limits and deductibles.[24] Confirmatory evidence was provided that the D&O insurance premium reflects the quality of the firm's corporate governance.[25] The overall results suggest that D&O premiums contain useful information about the quality of firms' governance. In Taiwan, Tsai-Jyh Chen and Chia-Hui Pang surveyed 105 of the largest 500 enterprises in 2008. Their research found that the potential demand for D&O insurance is related to overseas investments and the stock holdings of inside directors. In other words, purchases of D&O insurance is significantly related to corporate governance.[26]

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20 . Sean J. Griffith, *Uncovering a Gatekeeper: Why the SEC Should Mandate Disclosure of Details Concerning Directors' and Officers' Liability Insurance Policies*, 154 U. PA. L. REV. 1147, 1182 (2006).

21. George Kalchev, *The Demand for Directors' and Officers' Liability Insurance by US Public Companies* 1 (2004), http://ssrn.com/abstract=565183.

22. M. Martin Boyer, *Directors' and Officers' Insurance and Shareholder Protection* 5 (2005), http:/ssrn.com/abstract=886504.

23. Noel O'Sullivan, *Insuring the Agents: The Role of Directors' and Officers' Insurance in Corporate Governance*, 64 J. RISK & INS. 545, 554 (1997).

24. John E. Core, *On the Corporate Demand for Director' and Officers' Insurance*, 64 J. RISK & INS. 63, 63 (1997).

25. The other research of John E. Core supports this conclusion as well. *See* John E. Core, *The Directors' and Officers' Insurance Premium: An Outside Assessment of the Quality of Corporate Governance*, 16 J.L. ECON. & ORG. 449, 450 (2000).

26. Chen & Pang, *supra* note 3, at 171.

2. *Missing Monitor: Opponent Arguments*

By contrast, some researchers argue against the monitoring hypothesis and the positive relationship between the purchase of D&O insurance and corporate governance. Tom Baker and Sean J. Griffith examine how liability insurers transmit and transform the content of corporate and securities law. This article discusses how D&O insurers evaluate risk in order to arrive at that premium number. It found that, in addition to financial analysis of corporations, underwriters focus primarily on the corporate governance of the prospective insured, especially "deep governance" variables such as culture and character.[27] In other words, D&O insurers do not offer loss prevention services to their insured corporations, and they do no monitor the corporate governance of their insured corporations.[28]

Besides, moral hazard is a significant concern in liability insurance. D&O liability insurance may considerably nullify the deterrence effects of litigation against directors, causing directors to be less attentive to their duties to shareholders.[29] Some countries such as Germany prohibit D&O liability insurance because of the problem of moral hazard.[30] The underwriting cycle also plays an important role.[31] In a difficult market, underwriters become more selective, more interested in higher attachment points, less willing to offer high limits, less willing to negotiate contract terms, and able to command dramatically higher prices for what amounts to less coverage.[32] Hence, premiums are not always related to litigation risk of insured corporations. This provides a different viewpoint from previous studies.

The similar perspective is further provided by Tom Baker and Sean J. Griffith. They indicate again that in the vast majority of instances, insurers do not provide corporate governance.[33] Usually insurers might be expected

27. Tom Baker & Sean J. Griffith, *Predicting Corporate Governance Risk: Evidence from the Directors' & Officers' Liability Insurance Market*, 74 U. CHI. L. REV. 487, 543 (2007).

28. JOHN F. OLSON ET AL., DIRECTOR & OFFICER LIABILITY: INDEMNIFICATION AND INSURANCE § 4: 27 (2016-2017 ed., 2016). *See also* Tom Baker & Sean J. Griffith, *How the Merits Matter: Directors' and Officers' Insurance and Securities Settlements*, 157 U. PA. L. REV. 755, 831 (2009).

29. Holderness, *supra* note 14, at 115.

30. María Gutiérrez, *An Economic Analysis of Corporate Directors' Fiduciary Duties*, 34 RAND J. ECON. 516, 517 (2003).

31. *See* Joshua Dobiac, *I Came, I Saw, I Underwrote: D & O Liability Insurance's Past Underwriting Practices and Potential Future Directions*, 14 CONN. INS. L.J. 487, 495 (2008).

32. Also, due to the complexity of D&O insurance, insurance brokers are critical in insurance arrangements, such as assembling coverage from different insurance companies. Baker & Griffith, *supra* note 27, at 506-07.

33. As one of their interviewees stated: "You had asked me on the phone whether companies . . . changed their behavior . . . for the benefit of the D&O insurers. I don't think they are. I think the brokers sometimes can put lipstick on the pig, but that is a marketing feature. And it seems to me that however high D&O premiums climb, they are not going to climb high enough to get the companies to

to provide loss prevention functions. For example, insurers might provide discounts to encourage corporations to improve corporate governance and thus decrease litigation risks. However, according to empirical results, insurers do not do this. Sometimes insurers give advice to corporations, but that is usually ignored by the corporations. In the end, D&O insurers do not provide loss prevention function.[34] Tom Baker and Sean J. Griffith conducted in-depth interviews with underwriters, actuaries, brokers, lawyers and corporate risk managers. They found that what underwriters are concerned about are "deep governance" variables such as culture and character, variables which are not confined to the financial analysis of the insured companies.[35] Moreover, the advice given by insurers is usually ignored by insured companies.[36]

Besides, Joshua Dobiac evaluates how corporate governance may be a compelling factor in individualized underwriting. In conclusion, he has a similar opinion as Baker and Sean J. Griffith: the governance role of D&O liability insurance is minor and whatever effect poor governance has on pricing is not adequate to change corporate behavior.[37] Boyer and Delvaux-Derome's conclude that firms with weak governance systems facilitate opportunistic behavior and are consequently to buy D&O insurance.[38] This implies that the positive relationship between the purchase of D&O insurance and corporate governance of the insured companies is questionable. From this point of view, the purchase of D&O insurance is not necessary for the purposes of corporate governance and risk management. This is also the reason this proposal intends to reexamine the relationship between D&O insurance and corporate governance in Taiwan.

3. *Proposal of Signal Hypothesis*

From the analysis of literature above, it could be found that D&O liability insurance's impact on corporate governance is highly controversial. There are two main opposing arguments on this issue. One opinion argues that D&O liability insurance plays an important corporate governance role. This is mainly based on the monitoring hypothesis in which an insurer will thoroughly scrutinize the insured. On the other hand, opponents argue that

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really, really pay attention." Tom Baker & Sean J. Griffith, *The Missing Monitor in Corporate Governance: The Directors' and Officers' Liability Insurer*, 95 GEO. L.J. 1795, 1808 (2007).

34. *Id*. at 1808-12.

35. Baker & Griffith, *supra* note 27, at 543.

36. Baker & Griffith, *supra* note 33, at 1808-12.

37. Dobiac, *supra* note 31, at 508.

38. M. Martin Boyer & Mathieu Delvaux-Derome, *The Demand for Directors' and Officers' Insurance in Canada* 9 (2002), http://ideas.repec.org/p/cir/cirwor/2002s-72.html (last visited Aug. 31, 2016).

there is no relationship between the purchase of D&O liability insurance and corporate governance. D&O liability insurance does not always play an important role in corporate governance. Moreover, moral hazard might cause more negative effects. In the situation that D&O liability insurance is purchased out of managerial opportunism, it is more impractical to believe D&O liability insurance's positive impact on corporate governance. Even though they have different argument and reasoning about the monitoring function of S&O insurance, most of them admit that D&O insurance can convey certain signal. In other words, even though D&O insurance cannot play a role of spur to urge firms optimize their corporate governance, it may be an important signal to the market.[39] From the details of insurance package and premiums, insurers' assessment for the insured firms would convey to the investors. Besides, if D&O insurance enhances the protection of directors and implies the concern of corporate governance of firms, then D&O insurance shall imply good signal. In contrast, if D&O insurance would induce moral hazard or opportunistic behavior, this implies damages would happen. As a result, D&O insurance would convey negative signal.

The signal effect of D&O insurance can also be found by the attitude of the insured firms. Jinyoung Park tests D&O insurance and voluntary disclosure of Canadian firms. He finds that an association exists between D&O insurance coverage, disclosure frequency and precision.[40] The more insurance coverage, the more optimistic information is disclosed. That information would also be more precise and timely.[41] Besides, significantly favorable response to this information will be given by market.[42] This implies the signal effect of D&O insurance, and the favorable response from market gives firms more intensives to purchase D&O insurance.

Because D&O insurance will emit some signal to the market, the decision of D&O insurance purchase might not be a pure consideration of insurance purchase. If D&O insurance can bring positive effect, firms with good corporate governance might purchase D&O insurance to demonstrate their emphasis on corporate governance and attract more investors. For the firms with bad corporate governance, it is also possible for them to purchase D&O insurance to establish their reputation.[43] In contrast, if D&O insurance can bring negative effect, every firm will avoid purchasing D&O insurance because this may signalize that some problems exist in companies.[44] In the

39. *See* Griffith, *supra* note 20.

40. *See* Jinyoung Park, The Effect of Directors' and Officers' Liability Insurance and Indemnification on Voluntary Disclosure: Evidence from Canadian Firms 2 (June 14, 2005) (unpublished Ph.D. dissertation, Purdue University) (on file with Purdue University).

41. *Id.*

42. *Id.*

43. *See* Boyer, *supra* note 22, at 8-9.

44. *Id.*

end, what firms consider vital are not only the indemnification function of D&O insurance, but also how to create the signal they desired.

Followed by previous literature review, this paper proposes the alternative hypothesis to monitoring hypothesis, which is signal hypothesis. This hypothesis argues that D&O insurance has significant effect in signal transmission. In addition to indemnification, the signal effect is another important consideration in insurance purchase. Except signal effect, other additional function of D&O insurance is disputable, especially monitoring function. D&O insurance is not a component of monitoring mechanism for firms, and its monitoring function is limited. In consequence, the argument of monitor hypothesis that the firms with poor corporate governance will have more demand for D&O insurance is not sustainable.

B. *Research Design*

1. *Variables*

(a) D&O Insurance

In order to examine the relationship between purchases of D&O insurance and the corporate governance of the insured companies, the dependent variable in the first model is whether or not the listed companies purchased D&O insurance. The variable *Purchase* is a dummy variable that denotes whether or not companies purchased D&O insurance. This equals 1 if companies purchased D&O insurance and 0 if they did not. Then, the amount of D&O insurance coverage is the dependent variable for another panel. Insurance coverage indicates how much insurers must indemnify insured companies when losses take place. The variable *Coverage* denotes how much coverage a company purchased. Individual coverage of every firm is calculated respectively. If a company had more than one policy, the sum of all of that company's coverage was calculated. If a company simultaneously purchased insurance for individual directors and the entire board of directors, all of that coverage was combined as well.

(b) Business Structure

A company's industry is an important consideration in assessing its corporate governance.[45] The industry of a company may affect its tentative litigation risk. Especially in Taiwan, it is believed that high-technology

45. Chen & Pang, *supra* note 3, at 178-79.

companies have more litigation risk[46] and have more demand for D&O insurance. Hence, the variable *Industry* is used to denote the industry group to which the companies belong. This paper defines "Semiconductor Industry," "Computer and Peripheral Equipment Industry," "Optoelectronic Industry," "Communications and Internet Industry," and "Electronic Parts/Components Industry" as high-technology companies and grant them the value "1." Other groups, which are not high-technology companies, are defined with the value "0." The variable *Industry* is a dummy variable.

(c) Financial Performance

Litigation risk of firms may be related to their financial performance. The firms with poor financial performance may have more demand for D&O insurance. Regarding this, a firm's return of equity is usually used as proxy of financial performance.[47] It is expected that this will be negatively related to the demand of D&O insurance.[48] *ROE* is used in this paper to indicate the financial performance of the listed companies during 2008 in Taiwan. All of this information was obtained from the (TEJ).

(d) Corporate Governance

There are several variables used to indicate the quality of corporate governance. Generally, ownership structure is an important issue regarding corporate governance. When insiders' control over firms increases, the preference of outside shareholders may be ignored and the demand for insurance may increase.[49] Actually, D&O insurance applicants are typically asked to disclose the information about insider ownership and significant outside blockholdings.[50] So two variables are set up to test this factor. The variables *Sdirector* indicates the number of shares held by directors. The variable *Ctrldirector* indicates the number of directors nominated or controlled by the parent company or the largest controlling group within the company, such as family members, relatives, or the parent company.

As mentioned above, D&O insurance may be considered an important part of compensation packages for managers[51] and directors, especially for outside directors, as they often will not serve unless the package meets their reservation utility.[52] By this reasoning, the compensation for directors and

46. *Id*. at 178.
47. Core, *supra* note 25, at 462.
48. *Id*.
49. Core, *supra* note 24, at 68.
50. Baker & Griffith, *supra* note 27, at 522.
51. Boyer & Delvaux-Derome, *supra* note 38, at 2-3.
52. Core, *supra* note 24, at 73.

officers and D&O insurance are substitutes and are negatively related. However, there is an opposite argument, which proposes that the evidence to support this reasoning cannot be found.[53] A different possible reasoning is that more compensation implies more liability for directors and officers, and thus there is more demand for D&O insurance.[54] By this reasoning, compensation and D&O insurance are positively related. In order to clarify this problem, the variable *Remuneration* is be set to indicate the compensation package offered to the directors of each listed company.

An independent or outside director is usually viewed as an important mechanism for corporate governance. The more independent directors maintain, the more closely the firms are overseen.[55] Possible mistakes may be prevented via this mechanism. In this way, litigation risk will be decreased and thus the demand for D&O insurance will also decrease.[56] The monitoring hypothesis can also suggest this reasoning. For the purpose of improving corporate governance, D&O insurance and other mechanisms, such as an independent director, are substitutes and therefore negatively related. However, M. Martin Boyer proposes a different argument, which is the risk aversion hypothesis. Compared to inside directors, independent directors receive less compensation and fewer benefits from firms, and, as such, they usually request more D&O insurance coverage.[57] The number of independent directors is positively associated with D&O insurance. In order to evaluate this factor, the variables *Indptdirector* and *Auditcomitee* is used to indicate the number of independent directors and members of auditing committee in each listed company. Additionally, the dummy variable *Dual* equals 1 if the chairman of the board of directors is also the CEO, and is otherwise 0.

(e) Litigation Risk

In addition to the previous mentioned monitoring and signal function, the main purpose of D&O insurance is still to cancel out litigation risk. A high number of prior litigations may indicate bad corporate governance of firms. Under this reasoning, prior litigation may cause D&O claim or negative reputational effect, and thus be positively related with the demand for D&O insurance.[58] This research pioneers to collect litigations that are

53. *Id*. at 84.
54. Chen & Pang, *supra* note 3, at 179.
55. Boyer & Delvaux-Derome, *supra* note 38, at 10. However, the function of independent director is also controversial. *Cf.* Victor Brudney, *The Independent Director-Heavenly City or Potemkin Village?*, 95 HARV. L. REV. 597, 611 (1982).
56. *Id*.
57. Boyer, *supra* note 22, at 10.
58. Core, *supra* note 25, at 462.

significant and are disclosed by law.[59] Using the variable *Litigation* is an attempt to capture the number of such litigations of firms. If the number of litigations is in a positive relationship with the demand of D&O insurance, then monitoring the hypothesis is supported; otherwise, it is not. Similarly, debt-asset ratio indicates firms' tentative financial problems. Firms with higher debt-asset ratios are usually in worse financial situations and thus have more risk of litigation.[60] Therefore, the variable *DAratio* indicates the debt-asset ratio of each listed company during 2008-2014. In sum, all of the variables and their descriptions are provided in Table 1.

Table 1: Table of Variables

Variables	Definition
Auditcomitee	The total number of auditing committee members.
Coverage	The total coverage companies purchased.
Purchase	Dummy variable. This equals 1 if companies purchase D&O insurance and 0 otherwise.
Industry	Dummy variable. This equals 1 if companies are high technology industry and 0 otherwise.
ROE	Return on equity of companies
Remuneration	The total of compensation package offered to directors
Indptdirector	The total number of independent directors.
Sdirector	The percentage of shares held by directors (%).
Ctrldirector	Controlled directors. This indicates the number of directors who are nominated or controlled by the largest controlling group of the company, such as family, relatives, or parent company.
Dual	Dummy variable. This equals 1 if chairman of board of directors is identical to CEO and 0 otherwise.
DAratio	Debt-asset ratio of firms.
Litigation	The number of disclosed significant litigation of firms.
lnmv	Natural logarithm of market value of firms.
Bv	Book value of firms.
EPS	Earnings per share of firms.
S_ROE	Standard deviation of ROE.
S_ROA	Standard deviation of ROA.
S_EPS	Standard deviation of EPS.
S_DAratio	Standard deviation of debt-asset ratio.
S_Sti	Standard deviation of short-term investment.

Source: Author

59. Data can be retrieved via: MKT. OBSERVATION POST SYS., *supra* note 10.
60. Chen & Pang, *supra* note 3, at 178.

2. *Methods*

This paper follows Clifford G. Holderness's approach in descriptive statistics.[61] This type of analysis is helpful in understanding the attributes of the types of companies that purchase D&O insurance and the companies that do not. Also, this research generally follows the regression analysis applied in many previous researches, like models developed by O'Sullivan,[62] M. Martin Boyer[63] and Core.[64] They use OLS regressions when the dependent variable, which is numeric value, is the limit of policy, and use logistic, which is binary, when the dependent variable is whether D&O insurance was purchased or not.[65] Thus, regression with panel data and robust standard errors are applied.[66] The statistical software package used is STATA.[67] In model (1), the dependent variable is a binominal variable regarding whether or not firms purchase D&O insurance. This model is to test how D&O insurance purchase behavior relates to firms' governance and whether D&O insurance purchase behavior is a signal for corporate governance and thus whether monitoring function can be exerted. Because the dependent variable is binary, logistic regression is applied in this section.[68] Afterwards, insurance purchase is substituted with coverage in dependent variable in mode (2), to test the correlation between insurance coverage and previous variables. The regression models are shown in equations below.

$$\begin{aligned} Purclase = {} & \alpha + \beta_2 lndustry + \beta_3 \mathrm{ROE} + \beta_3 Remuneration + \beta_3 lndptdirector + \\ & \beta_3 Sdirector + \beta_3 Ctrldirector + \beta_3 \mathrm{Dual} + \beta_3 DAratio + \\ & \beta_3 Litigation + \varepsilon \end{aligned} \quad (1)$$

61. Holderness, *supra* note 14, at 123-24.

62. O'Sullivan, *supra* note 23.

63. M. Martin Boyer, *Is the Demand for Corporate Insurance a Habit? Evidence of Organizational Inertia from Directors' and Officers' Insurance* 13 (2004), http://ideas.repec.org/p/cir/cirwor/2004s-33.html (last visited Mar. 2, 2017).

64. Core, *supra* note 24, at 77.

65. This approach is also used to test the association between D&O insurance and the enactment of Sarbanes-Oxley Act, and whether this act influence D&O insurance transaction. Anna Oh, Insuring against Another Enron: The Role of Cross-listing Status of Canadian Firms on the Purchase of Directors' and Officers' Insurance in the aftermath of Sarbanes-Oxley Act of 2002 13-14 (May, 2009) (unpublished Senior Honors Thesis, Department of Policy Analysis and Management Cornell University), http://ecommons.cornell.edu/bitstream/1813/14231/2/AnnaOhFinalThesis1.pdf.

66. Command of "xtscc" in STATA is applied to produce Driscoll and Kraay standard errors for coefficients estimated by fixed-effects regression. *See* ADRIAN COLIN CAMERON & P. K. TRIVEDI, MICROECONOMETRICS USING STATA 268 (2009).

67. Unless otherwise mentioned, all empirical works in this study are conducted by these two software packages.

68. DAVID W. HOSMER & STANLEY LEMESHOW, APPLIED LOGISTIC REGRESSION 1 (2000).

$$Coverage = \alpha + \beta_2 Indusry + \beta_3 \text{ROE} + \beta_3 Remuneration + \beta_3 Indptdirector + \beta_3 Sdirector + \beta_3 Ctrldirector + \beta_3 \text{Dual} + \beta_3 DAratio + \beta_3 Litigation + \varepsilon \quad (2)$$

C. *Empirical Result and Analysis*

1. *Descriptive Statistics*

In 2008, when data of D&O insurance began to be available, 588 firms (49.4%) purchased D&O insurance and 615 (51.1%) did not. Afterwards, firms that purchased D&O insurance gradually and constantly increased, indicating that a growing number of listed firms in Taiwan began to purchase D&O insurance. In the recent three years, the percentage of firms purchasing D&O insurance is around 60%.

Table 2: Descriptive Statistics

	2008	2009	2010	2011	2012	2013	2014	Total
Firms without D&O	615 (51.1%)	586 (47.4%)	561 (44.6%)	540 (42.8%)	490 (39.4%)	456 (37.3%)	502 (38.9%)	3,750 (43.0%)
Firms with D&O	588 (48.9%)	650 (52.6%)	697 (55.4%)	722 (57.2%)	755 (60.6%)	766 (62.7%)	787 (61.1%)	4965 (57.0%)
Total	1203	1236	1258	1262	1245	1222	1289	8715

Source: Author

After testing the difference between firms that purchased D&O insurance and firms without D&O insurance, it is found that insured firms usually have better performance and governance than uninsured companies. They have more independent directors, more audit committee members, smaller percentages of company stock being held by major shareholders, fewer controlled directors, and fewer managers and officers who have been appointed by the controlling company or parent group. This means that companies with better corporate governance and monitoring mechanisms purchase more D&O insurance. This is contrary to the previous monitoring hypothesis that monitoring mechanisms and D&O insurance are substitutes and are negatively related.

The percentage of remuneration all paid to directors of companies with D&O insurance is lower than among companies that do not purchase D&O insurance. This implies that companies that pay out less remuneration to company directors have greater demand for D&O insurance. This does support the hypothesis that remuneration and D&O insurance are substitutes for each other and are negatively related. The differences of duality,

debt-asset ratio and litigation are not significant. Especially in litigation, the means of firms with and without D&O insurance are very similar, implying they do not have significant difference in litigation risk. This does not support the intuitive hypothesis that firms with more risk should have more demand for insurance, and not support monitoring hypothesis.

Table 3: Comparison between Firms without and with D&O Insurance (1)

	Firms without D&O			Firms with D&O			Total		
	Mean	N	Std. Dev.	Mean	N	Std. Dev.	Mean	N	Std. Dev.
ROE	2.4294	3407	15.12183	2.4235	4878	19.93992	2.426	8285	18.11341
*Remuneration**	15.8876	2699	1.35815	15.0153	3936	14.17866	15.3701	6635	10.9626
*Indptdirector**	0.8136	3403	1.1399	1.5571	4492	1.22735	1.2366	7895	1.24601
*Auditcomitee**	0.01	3407	0.096	0.10	4885	0.302	0.06	8292	0.244
*Ctrldirector**	3.0022	3403	2.58074	2.6962	4492	2.31918	2.8281	7895	2.43992
*Sdirector**	24.7604	3375	14.52494	21.6103	4480	14.5052	22.9638	7855	14.59631
Dual	0.3	3412	0.46	0.31	4885	0.461	0.31	8297	0.461
Daratio	104.0407	3403	394.97267	110.5088	4856	310.07387	107.8437	8259	347.56796
Litigation	0.15	3413	0.904	0.15	4885	0.581	0.15	8298	0.731

Source: Author
Note: * indicates that the difference is significant in independent sample test.

2. *Regression Analysis*

The variable concerning whether or not listed companies purchased D&O insurance is used as the dependent variable. The result shows that the variables *Industry*, *Auditcomitee*, *Ctrldirector*, and *Sdirector* are significant. The industry of the companies is positively related to their demand for D&O insurance. This does support the hypothesis developed from a review of the previous literature in that high technology industry in Taiwan has a greater need for D&O insurance. *Auditcomitee* is positively related to the purchase of D&O insurance, suggesting firms with more members in audit committee are intended to purchase D&O insurance. Additionally, *Sdirector* is negatively significant, implying firms with less percentage of shares held by directors purchasing more insurance. These results are quite similar to the results of previous descriptive analyses, implying that the companies with better corporate governance have more demand for D&O insurance. In other words, the purchase of D&O insurance in Taiwan is related to the quality of corporate governance, but how corporate governance affects purchases of D&O insurance in Taiwan is contrary to the assumption of the monitoring hypothesis. The variable *Litigation* is not significant, and, therefore, no evidence could support the assumption that prior litigation will cause the

demand for insurance. As a result, the theory of monitoring hypothesis may not be supported. On the contrary, signal hypothesis provides possible explanation for this empirical result. The firms with good corporate governance care more about corporate governance. In contrast to the firms with poor corporate governance, they are more willing to improve governance and reputation. Therefore, even though they have better governance, they are still willing to purchase D&O insurance. This may be because they care about corporate governance, so they do not mind doing everything possible to promote governance and reputation in order to attract greater investments.

For the robustness test, which is different from the previous model for which the dependent variable is whether a company is insured or not, the amount of coverage is used as the dependent variable. The result is similar to the previous specification. *Remuneration* is positively significant, and this indicates that remuneration and D&O insurance for directors may not be substitutes. Significances of *Auditcomitee* and *Sdirector* are the same as the previous result - these implying firms with more remuneration, more audit committee members, and less shares held by directors, tend to purchase more insurance coverage. This once again provides evidence for rejecting monitoring hypothesis. Similarly, *Litigation* is still not significant, either. Thus, there is no evidence supporting the correlation between insurance coverage and litigation risk, which should be one of important consideration of insurance purchase.

Table 4: Result of Regressions with Panel Data (1)

	(1)	(2)
	Purchase	Coverage
Industry	0.0349***	-0.00439
	(3.84)	(-1.67)
ROE	0.00538	0.00111
	(0.94)	(0.72)
Remuneration	0.0241	0.0206**
	(0.95)	(2.75)
Indptdirector	-0.131	-0.0645*
	(-0.84)	(-2.01)
Auditcomitee	1.364*	0.757***
	(1.99)	(4.88)
Ctrldirector	0.582***	-0.000742
	(7.68)	(-0.03)

	(1)	(2)
	Purchase	Coverage
Sdirector	-0.0377**	-0.00616***
	(-2.68)	(-3.97)
Dual	-0.0397	-0.294***
	(-0.15)	(-5.97)
DAratio	0.00114	0.000329***
	(1.45)	(6.13)
Litigation	0.135	0.00196
	(0.77)	(0.15)
Constant	-	5.010***
		(49.06)
N	912	3568
R^2		0.0818
Hausman test	0.0000	0.0001
Model	fe	xtscc
Mean VIF	1.92	1.84

Source: Author
Note: *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D. *Summary*

This section has discussed monitoring hypothesis and tested it within the context of Taiwan. The empirical evidence shows that the monitoring hypothesis is not supported in Taiwan. Firms with good corporate governance and less risk intend to purchase more D&O insurance. In contrast, firms with bad corporate governance and more risk intend to purchase less D&O insurance. A possible alternative explanation of this phenomenon is signal hypothesis. Firms with good corporate governance are usually more concerned about corporate governance. Even though they are of better quality and have less potential risk, they are still willing to purchase insurance to convey that they are good firms and thus improve their reputations and attract investors. Hence, more tests for signal hypothesis and opportunistic behavior will be provided in following sections.

III. ALTERNATIVE HYPOTHESIS: SIGNAL EFFECT OF D&O INSURANCE

Following the previous test, this section will examine signal effect of D&O insurance more closely. The release of economically relevant

information is important for the evaluation of firms' outstanding securities and the ability to attract investment in the future.[69] According to the reasoning of signal hypothesis, the purchase of D&O insurance will release signal to investors and investors will evaluate the purchase of D&O insurance positively. Thus, D&O insurance purchase should have positive effect on firms' stock price. However, with the protection of insurance, directors might have more opportunistic behavior or moral hazard.[70] Then the purchase of D&O insurance will no longer emit positive signal. In contrast, investors will worry about D&O insurance because the insurance may encourage risky behavior. Therefore the signal effect of D&O insurance is disputable. In order to clarify this issue, this research uses the famous model proposed by Ohlson concerning evaluating value of firms to test the effect of D&O insurance. If there is positive relationship between D&O insurance and stock price, the positive effect of D&O insurance is implied. In contrast, inverse association between D&O insurance and stock price implies D&O insurance emits negative signal to the market.

A. *Corporate Governance and Market Value of Firms*

Albeit the discussion of corporate governance is sprouting, it should be wondered that firm's corporate governance behavior indeed increase their market value? However, in the United States, many empirical works cannot provide strong evidence for the relationship between corporate governance behavior and increase of market value.[71] Similar problems are also addressed in emerging market. Bernard S. Black, Hasung Jang and Woochan Kim test the relationship between corporate governance and market value of firms in Korea by OLS regression and instrument variables.[72] They find that corporate governance is an important but maybe casual factor of market value of firms.[73] Bernard S. Black also carries out empirical analysis in Russian.[74] He concludes that firm's corporate governance will affect their market value significantly if countries' constraints on corporate governance

69. Robert M. Lawless et al., *The Influence of Legal Liability on Corporate Financial Signaling*, 23 J. CORP. L. 209 (1998).

70. *See* Chen Lin et al., *Directors' and Officers' Liability Insurance and Loan Spreads*, 110 J. FIN. ECON. 37, 59 (2013).

71. Bernard S. Black, *Does Corporate Governance Matter? A Crude Test Using Russian Data*, 149 U. PA. L. REV. 2131, 2131 (2001). Different argument like corporate governance can increase Apple's market value, *see In re* Apple Computer, Inc. Derivative Litig., No. C 06-4128 JF (HRL), 2008 WL 4820784, at 2 (N.D. Cal. Nov. 5, 2008).

72. Bernard S. Black et al., *Does Corporate Governance Predict Firms' Market Values? Evidence from Korea*, 22 J.L. ECON. & ORG. 366, 366 (2006).

73. *Id*.

74. Black, *supra* note 71.

are limited.[75]

However, different argument advocates corporate governance would substantially affect market value and shareholders.[76] Lawrence D. Brown and Marcus L. Caylor test the association between firms' performance and Gov-Score, which is composed by 51 corporate governance factors. They find firms with better governance indeed have better profit, more value and more benefit for shareholders.[77] Lucian A. Bebchuk, Alma Cohen and Allen Ferrell test the association between market value and corporate governance arrangements which are based on six provisions: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments. They find the index of such arrangements is inversely associated with market value.[78] Literatures also proposes that market value of firms would be affected their corporate governance in Russia.[79]

B. *D&O Insurance, Signal Effect and Market Value of Firms*

Some literature proposes the positive effect of D&O insurance on firm's performance and market value. Sanjai Bhagat, James A. Brickley and Jeffrey L. Coles find that D&O insurance has positive on shareholder wealth and no negative effect is found.[80] Jinyoung Park also finds the D&O insurance can positively contribute shareholder's wealth.[81] He tests the association between D&O insurance coverage and the quality of firms' voluntary disclosure.[82] He finds that there is an association between insurance coverage and forecast frequency and precision.[83] The more insurance coverage, the more disclosure occurs. There is also more precise and timely.[84] Besides, positive response from market is given to such information.[85] All these results imply the positive signal effect of D&O insurance.

However, it is controversy that whether D&O insurance increase firm

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75. *Id*.

76. Lucian A. Bebchuk et al., *What Matters in Corporate Governance?*, 22 REV. FIN. STUD. 783, 823-24 (2009).

77. Lawrence D. Brown & Marcus L. Caylor, *Corporate Governance and Firm Performance* 1 (2004), http://ssrn.com/abstract=586423.

78. *Id*. at 39.

79. Olga del Rio, *Corporate Governance in Russia*, *in* LAWS OF INTERNATIONAL TRADE § 151: 3, 3 (Thomson Reuters's Editorial Staff eds., 2017).

80. Sanjai Bhagat et al., *Managerial Indemnification and Liability Insurance: The Effect on Shareholder Wealth*, 54 J. RISK & INS. 721, 733 (1987).

81. Park, *supra* note 40, at 3.

82. *Id*. at 3.

83. *Id*. at 4.

84. *Id*.

85. *Id*.

performance and shareholder's wealth. The negative viewpoint mainly bases on the problem and risk that might be induced by D&O insurance. If D&O insurance represents the potential risk, opportunistic behavior and moral hazard, firms would avoid purchasing D&O insurance to damage the reputation and value of firms. Irene Y. Kim tests Canadian market and confirms the hypothesis that opportunism in financial reporting can be predicted by excess D&O insurance coverage.[86] Besides, litigation risk, corporate governance quality, high-tech industry, and leverage are inversely related to D&O insurance coverage.[87] In consequence, opportunistic behavior is implied. Narjess Boubakri and Nabil Ghalleb again test Canadian market and have more negative conclusion. D&O insurance indeed induces opportunistic behavior and has negative impact on firms' performance in the future.[88] Besides, their findings show that insurer cannot distinguish opportunistic risk and mandatory reporting is not so helpful.[89] Under such circumstance where asymmetric information and moral hazard are obvious, regulation and limitation are recommended.[90]

C. *Research Design*

1. *Application of Ohlson Model*

When evaluating firm value, non-accounting is usually and relatively less explored.[91] The Ohlson model can give a direct link between accounting amount and firm value. With the following refinement, the Ohlson model has been frequently applied in the valuation model of firms in accounting research.[92] The model postulates abnormal earnings by the following two equations:[93]

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86. Irene Y. Kim, *Directors' and Officers' Insurance and Opportunism in Accounting Choice* 21 (2005), http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2006-Madrid/papers/764024_full.pdf.

87. *Id*.

88. Narjess Boubakri & Nabil Ghalleb, *Does Mandatory Disclosure of Directors' and Officers' Liability Insurance Curb Managerial Opportunism? Evidence from the Canadian Secondary Market* 29-30 (2008), http://69.175.2.130/~finman/Reno/Papers/Does_Mandatory_Disclosure_Curb_Managerial_Opportunism.pdf.

89. *Id*. at 30.

90. *Id*.

91. Alnoor Bhimania et al., *Accounting and Non-Accounting Determinants of Default: An Analysis of Privately-Held Firms*, 29 J. ACCT. & PUB. POL'Y 517, 520 (2010).

92. CHII-SHYAN KUO, THE PRICING AND DETERMINANTS OF THE DISCRETIONARY COMPONENT OF EMPLOYEE STOCK OPTION VALUE 51 (2007).

93. Kin Lo & Thomas Z. Lys, *The Ohlson Model: Contribution to Valuation Theory, Limitations, and Empirical Applications* 12 (2000), http://ssrn.com/abstract=210948.

$$\widetilde{x}^{a}_{t+1} = \omega x^{a}_{t} + v_{t} + \widetilde{\varepsilon}_{1t+1} \quad (3)$$

$$\widetilde{v}_{t+1} = \gamma v_{t} + \widetilde{\varepsilon}_{2t+1} \quad (4)$$

Where v_t indicates the information not yet captured by accounting and $\widetilde{\varepsilon}$ is mean 0 disturbance term.[94] The Ohlson model is applied to evaluate how D&O insurance and corporate governance might affect firms' market value.

2. *Hypothesis Development*

In addition to the Ohlson model, this paper also follows the thoughts of Lawrence D. Brown and Marcus L. Caylor, which tested the relationship between firm performance and corporate governance,[95] and further tested the relation between firm performance, corporate governance and D&O insurance purchase. The core issue that should be defined first is that is D&O insurance a positive or negative signal to the market? Even though D&O itself is positive news, if it is accompanied by other information such as more internal risks, will this negatively affect firms' performance and market price? If D&O insurance protects directors and officers and lets them concentrate on management without worrying about litigation risk, D&O insurance will have positive signal effect. In contrast, if D&O insurance implies that firms might be not confident about their businesses, and firms might be in potential litigation trouble. Even worse, if the problems of moral hazard and adverse selection have been induced, then the purchase of D&O insurance is a bad news to the market. In this way, whether or not D&O insurance can spur firms to optimize their corporate governance is an important signal to the market.[96] Under the theory of signal hypothesis, the purchase and coverage of D&O insurance will convey a positive signal to the market and thus improve the market value of insured firms. In addition to the main hypothesis, other relevant variables are used as control variables. As discussed in the literature review, the effect of corporate governance on firms' market value is controversial. If D&O insurance is an outside monitoring mechanism for corporate governance, it would be reasonable to believe that D&O insurance and other governance mechanisms affect insured firms' market value. This paper assumes other corporate governance mechanisms would positively affect firms' market value.

94. *Id*.
95. Brown & Caylor, *supra* note 77, at 1.
96. Griffith, *supra* note 20, at 1181-82.

3. *Variables*

Utilizing the Olhson model, accounting and non-accounting information affects firms' market value. Researchers traditionally use stock price as the market value. In D&O insurance literature, M. Martin Boyer also uses market value of equity as the measure of the wealth of shareholder.[97] This study uses the market value of firms as the dependent variable. The variables *bv* and *EPS* represent the book value of and earnings per share of firms. Regarding the proxy variable of D&O insurance, *purchase* is a binary variable, which is coded as "1" when firms with insurance and "0" otherwise. Then variable *coverage* is the natural logarithm of D&O insurance coverage. In order to analyze the effect of D&O insurance on firms' performance completely, this paper will use these two D&O insurance proxy variables in separate panels. The variable *purchase* would be used in panel A, and the variable *coverage* would be used in panel B.

In terms of the proxy variables of corporate governance, this paper would like to follow the previous section and consider them as important non-accounting information. First of all, it is usually believed that the duality of the chairman of board (COB) and Chief Executive Officer (CEO) is negatively related to market value of firms. Under agency theory, the duality of COB and CEO might cause interest conflict and damage the benefit of firms. Maria Carapeto, Meziane Lasfer and Katerina Machera test this issue by event study, and their research strongly support agency theory.[98] They find that the announcement of split of COB and CEO would cause positive abnormal returns and vice versa.[99] In order to test the influence of duality of COB and CEO on the performance of firms, this section considers the variable *dual*. Ideally, independent directors are not affected by interest conflict and it is usually considered as a good mechanism for corporate governance.[100] Accordingly, appointment of independent or outside directors should convey positive signal to the market and have a significant positive price effect. However, Bernard S. Black, Hasung Jang and Woochan Kim argue that even in developed countries there is no evidence to prove that firms with more independent directors have better performance or higher share price.[101] Moreover, appointment of additional independent

97. Boyer, *supra* note 22, at 9.

98. Maria Carapeto et al., *Does Duality Destroy Value?* 15 (2005), http://ssrn.com/abstract=686707.

99. *Id*.

100. Perry E. Wallace, *Accounting, Auditing and Audit Committees after Enron, Et Al.: Governing outside the Box without Stepping off the Edge in the Modern Economy*, 43 WASHBURN L.J. 91, 114 (2003).

101. Black et al., *supra* note 72, at 408.

directors may signal that firms plan to address business problem.[102] Some empirical researches propose that more independent directors have no statistically significant effect on board's performance. Some literatures even argue that more independent directors would make board's performance worse.[103] In emerging market, Rajesh Chakrabarti, Krishnamurthy Subramanian and Frederick Tung test India market and find that independent director is indeed an importance component of monitoring function and adds the value of firms.[104] Even though the results are controversial, but the importance of independent director is undisputable. This paper hypothesizes that the number of independent directors is positively or negatively related to market value of firms, and the variable *Indptdirector* is contained in regressions. Similarly, the variable *Auditcomitee*, indicating the number of audit committee members, is also included in this section.

The value of shares may be affected by the ownership structure of firms. In firms with dispersed ownership, individual shareholders have less possibility and more cost to control the firms. They also have less incentive to monitor firms. As a result, control is in the hand of management.[105] On the other hand, in firms with concentrated ownership, controlling shareholders and blockholders have more incentive to monitor management.[106] However, blockholders are also a source of agency cost because they may act for their own benefits and other investors may have to pay for such costs. If investors expect more cost than benefit from ownership, they will discount the shares. In contrast, if investors expect more benefit than cost, they may be willing to pay more.[107] Every ownership structure may have different impacts on investors. This is also why securities law regulates the disclosure of ownership structure.[108] Besides, dominant owner might also influence firms' performance and corporate governance.[109] Jayesh Kumar tests Indian market and finds that the shares of directors would significantly influence firms' performance beyond a certain threshold.[110]

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102. Sanjai Bhagat & Roberta Romano, *Event Studies and the Law: Part II: Empirical Studies of Corporate Law*, 4 AM. L. & ECON. REV. 380, 402 (2002).

103. Sanjai Bhagat & Bernard Black, *The Uncertain Relationship between Board Composition and Firm Performance*, 54 BUS. LAW. 921, 943 (1999).

104. Rajesh Chakrabarti et al., *Independent Directors and Firm Value: Evidence from an Emerging Market* 20 (2010), http://ssrn.com/abstract=1631710.

105. Michael C. Schouten, *The Case for Mandatory Ownership Disclosure*, 15 STAN. J.L. BUS. & FIN. 127, 135 (2009).

106. *Id*.

107. *Id*.

108. *Id*.

109. Jayesh Kumar, *Agency Theory and Firm Value in India*, INDIRA GANDHI INSTITUTE OF DEVELOPMENT RESEARCH 23 (2004),
https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=501802.

110. *Id*. at 23-24.

These factors such as board and ownership structure also affect the risk of directors and related with D&O insurance. Thus, the variable *Ctrldirector* that indicates the number of controlled directors is also included in this section. This paper hypothesizes that it is negatively related to market value of firms. The variable *Sd* captures the number of shares of directors. These variables are also expected to be negatively related to market value of firms. Similarly, *Remuneration, DAratio*, and *Litigation*, which are important proxies for corporate governance, are also included in specification here. In conclusion, in order to consider the effect of D&O insurance and corporate governance on firms' market value, this paper adds D&O insurance and corporate governance into Ohlson model and reformulates the new equation below. *DO* represents the proxy variable of D&O insurance, including *Purchase* and *Coverage*. *CG* represents the proxy variables of corporate governance, including *Dual, Idirector, Sd, ctrldirector, Remuneration, DAratio*, and *Litigation.* The definitions of variables can be found in Table 1.

$$MV = a_0 + a_1 BV + a_2 EPS + a_3 CG + a_4 DO \quad (3)$$

D. *Empirical Result and Analysis*

1. *Descriptive Analysis*

Considering the new variables in this model, it is found that the difference of means between insured and uninsured firms is significant. This indicates that insured firms have significantly higher market value and EPS than uninsured firms. Two implications can be drawn from this result. First, this result echoes the previous findings that firms with better performance have more demand for D&O insurance, and this is different from the monitoring hypothesis. Secondly, firms that purchase D&O insurance also have higher market value, and this implies D&O may be beneficial for firms' market value. Thus, the signal hypothesis may be supported. In this way, the effect and magnitude of D&O insurance will be tested by following regression analyses.

Table 5: Comparison between Firms without and with D&O Insurance (2)

	Firms without D&O			Firms with D&O			Total		
	Mean	N	Std. Dev.	Mean	N	Std. Dev.	Mean	N	Std. Dev.
BV*	14.5040	3340	1.31944	14.8240	4682	1.46317	14.6908	8022	1.41386
EPS*	1.1884	3340	2.49344	1.6212	4682	4.14476	1.4410	8022	3.55798

Source: Author
Note: * indicates that the difference is significant in independent sample test.

2. *Regression Analysis*

In the first panel, the dummy variable, insured or not, is used as proxy variable of D&O insurance. It is found that the variables of D&O insurance purchase and the number of independent directors are positively significant. Furthermore, its coefficient 0.0604 is large, compared with other significant variables. This demonstrates that the purchase of D&O insurance is positively correlated to market value of firms. In the second panel, D&O insurance coverage is used as a proxy variable of D&O insurance and still positively significant. This also provides obvious evidence for a positive association between D&O insurance and market value. From such positive correlation, the positive signal effect of D&O insurance will be one possible explanation. Regarding proxy variables of corporate governance, the empirical result is roughly similar to the results of previous tests. An increasing number of firms with more independent director and audit committee members have more D&O insurance purchase and coverage. And thus monitoring hypothesis is more likely to be rejected, and signal hypothesis is more likely to be supported.

Moreover, debt-asset ratio and prior litigation of firms are also positively correlated to the market value of firms. The possible explanation may be that firms that are more active may not only have better performance in market value and EPS, but also induce more controversies and litigations. This can be understandable. However, if over risk-taking behavior is induced by D&O insurance, this may mitigate the function of insurance and thus create more problems. Thus, in-depth tests about opportunistic behavior and D&O insurance will be provided in the next section.

Table 6: Result of Regressions with Panel Data (2)

	(1)	(2)
mv		
Bv	0.890***	0.879***
	(104.73)	(111.87)
EPS	0.0888***	0.0891***
	(22.37)	(21.44)
Purchase	0.0604**	
	(2.94)	
Coverage		0.000133***
		(7.22)
Industry	0.00156	0.00165
	(0.65)	(0.65)
Indptdirector	0.0382***	0.0416***
	(9.54)	(9.39)

	(1)	(2)
mv		
Auditcomitee	0.0971**	0.0843*
	(2.95)	(2.06)
Ctrldirector	-0.00838	-0.00868
	(-0.87)	(-0.88)
Sd	0.00304***	0.00282***
	(4.39)	(3.90)
Dual	-0.00637	-0.00855
	(-0.52)	(-0.66)
Daratio	0.000309***	0.000295***
	(10.39)	(11.19)
Litigation	0.0236**	0.0165**
	(2.87)	(3.24)
Constant	1.619***	1.797***
	(10.51)	(13.58)
N	7795	8083
R^2	0.8846	0.8831
Hausman test	0.0000	0.0000
Model	xtscc	xtscc
Mean VIF	2.42	2.22

Source: Author
Note: *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

E. *Summary*

From the empirical tests in this section, they demonstrate a positive association between D&O insurance purchase and market value of firms. This implies that despite the variety of factors in the market, purchasing D&O insurance and increasing insurance coverage are positively correlated to the increase of market value of firms. This result not only matches with the previous empirical results, but also sheds light on the effect of D&O insurance. A possible explanation is the signal hypothesis--a firm may purchase D&O insurance for bettering its reputation. Even though insurance costs premium, but it can convey a positive signal which is as important as the book value and EPS of firms. Hence, the empirical result provides possible support for the signal hypothesis and explains why firms will do so even though they have good corporate governance.

IV. RISK TAKING AND OPPORTUNISTIC BEHAVIOR

Following the previous tests, this section further tests if the opportunistic problem happens in Taiwanese D&O insurance market, and thus affects the function of D&O insurance. In the literature review, previous researches that concerns moral hazard in insurance, especially in D&O insurance, will be introduced, then hypotheses will be built on the empirical researches. By hypothesizing that D&O insurance will not increase insured firms' volatility of returns and short term investments, this research will test whether D&O insurance induces more risky behavior of insured firms. In the end, the empirical results and relevant discussion will be presented.

A. *Insurance and Risk Taking*

Regarding the effect of D&O insurance, there are mainly two opposite arguments. As mentioned before, monitoring hypothesis propose that insurer can monitor insured firms and even improve their corporate governance. In contrast, opponents argue that D&O insurance weaken managerial control device such as litigation.[111] Many recent researches find that managerial opportunism is an important factor of D&O insurance purchase.[112] The reason of managerial opportunism might come from the positive signal effect of D&O insurance. Jinyoung Park finds that there is a positive association between insurance coverage and forecast frequency and precision.[113] Also, market will give positive response to such information.[114] This implies the positive signal effect of D&O insurance. Because of the positive effect and response from the market, opportunism exists in firms' voluntary disclosure. Managers might intend to report earnings aggressively to increase their compensation.[115] In response to this situation, auditors intend to charge higher fees to the firms of which the managers have higher opportunistic risk in Canada.[116] On the other hand, M. Martin Boyer and Hanon Amandine have different finding about the impact of accounting discretion on D&O insurance purchase. By testing Canadian market, they find that the positivity of discretionary accruals have no significant impact on D&O insurance

111. Park, *supra* note 40, at 6.
112. *Id*.
113. *Id*. at 2.
114. *Id*. at 2-3.
115. Hyeesoo H. Chung & Jinyoung P. Wynn, *Managerial Legal Liability Coverage and Earnings Conservatism*, 46 J. ACCT. & ECON. 135, 135 (2008).
116. Hyeesoo H. Chung et al., *Managerial Opportunism, Legal Liability Rule and Audit Pricing* 28 (2008), http://www.ibrarian.net/navon/paper/Managerial_Opportunism__Legal_Liability_Rule__and.pdf?paperid=13420340.

purchase.[117] This implies that moral hazard does not affect the financial disclosure.[118]

In addition to accounting opportunism,[119] firms might carry more opportunistic behavior. Chen Lin, Micah S. Officer, Rui Wang and Hong Zou test Canada D&O insurance market and find that there is an association between D&O insurance coverage and higher as-issue bond yields, higher loan spreads, and higher risk taking. This result demonstrates that debt holder percepts that higher D&O insurance coverage implies higher risk.[120] The concerns about moral hazard are also implied. Chen Lin, Micah S. Office and Hong Zou again test the association between D&O insurance and acquirer cumulative abnormal announcement returns. They find that there is an inverse association. This means acquirers with higher D&O insurance coverage have less acquisition synergies and pay more premiums.[121] This implies that D&O insurance might induce moral hazard.[122] Also, John M. R. Chalmers, Larry Y. Dann, Jarrad Harford find there is an inverse association between D&O insurance coverage and the performance of 3-year stock price.[123] And managers who have high D&O insurance coverage have poor performance in the future.[124] Narjess Boubakri, Martin Boyer, and Nabil Ghalleb further confirm this result. They find managers purchase D&O insurance for opportunistic earnings, and insurers would charge more premiums for those who have higher opportunistic risk.[125] By testing the Canadian market, Boyer finds that there is a moral hazard problem for managers because D&O insurance reduces their ability to increase cash flow.[126] Peter Egger, Doina Radulescu, and Ray Rees find that if senior

117. M. Martin Boyer & Hanon Amandine, *Protecting Directors and Officers from Liability Arising from Aggressive Earnings Management* 11 (2009), http://ssrn.com/abstract=1504208.

118. *Id*.

119. In addition to D&O insurance, Robert M. Bowen, Shivaram Rajgopal and Mohan Venkatachalam further confirm previous literature and the association between poor corporate governance and accounting discretion. Robert M. Bowen et al., *Accounting Discretion, Corporate Governance and Firm Performance* 30 (2005), http://ssrn.com/abstract=367940.

120. Chen Lin et al., *Directors' and Officers' Liability Insurance and the Cost of Debt* 20-21 (2011), http://ssrn.com/abstract=1865679.

121. Chen Lin et al., *Directors' and Officers' Liability Insurance and Acquisition Outcomes* 26-27 (2010), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1641645.

122. *Id*. at 27. In addition, moral hazard is a significant concern in liability insurance. D&O liability insurance may considerably nullify the deterrence effects of litigation against directors, causing directors to be less attentive to their duties to shareholders. Holderness, *supra* note 14, at 115.

123. John M. R. Chalmers et al., *Managerial Opportunism? Evidence from Directors' and Officers' Insurance Purchases*, 57 J. FIN. 609, 633 (2002). They provide two interpretations for the use of D&O insurance. First, managers use insurance to solidify their ability to exploit inside information. Secondly, D&O insurance is used to protect the assets of managers and firms from litigations. Even though these two interpretations are not exclusive, their evidence implies that the former is more important.

124. *Id*.

125. Boubakri & Ghalleb, *supra* note 88, at 29-30.

126. M. Martin Boyer, *Three Insights from the Canadian D&O Insurance Market: Inertia,*

executives have some incentives to make short run gains, they must be insured to prevent the adverse consequences.[127]

Generally speaking, the majority of previous literatures support the hypothesis that D&O insurance might induce moral hazard or opportunistic behavior. If this conclusion is also true in the Taiwanese market, then D&O insurance itself is no longer good news. D&O insurance represents not only the cover of litigation risk, but also the trigger of opportunistic behavior.

B. *Research Design*

1. *Hypothesis Development*

Due to D&O insurance shielding litigation risk, insured firms may engage in more risky behaviors. If the insured directors, managers and firms behave opportunistically for an extended period of time, this is easy to be found by insurers. Insurers will adjust premium or even discontinue contract in response to risky behavior. In addition to long- term performance, attention should be paid to short-term performance after the purchase of D&O insurance. This study diverges from the previous literature on shareholder's wealth and long-term performance by focusing on short term performance. In short term performance, D&O insurance purchase might cause volatility of returns. The protection of insurance, allows directors and officers assurances to limit concern regarding litigation risk, expect intentional behavior. In order to maximize their benefit, rational directors and officers might do a highly volatile investment that has higher risk and higher return, as long as this is not excluded by policy exclusions. They will not do this in the long-term, because insurers will discover opportunistic behavior and raise the rates. So after D&O insurance purchase, directors and officers might increase opportunistic investment, but not to the extent that is excluded by policies or in the long term to avoid exposure.

This research hypothesizes that D&O insurance would not increase the firms' volatility of returns and short-term investments in Taiwan. In other words, D&O insurance would not cause opportunistic behavior and moral hazard of firms. As a result, the theory regarding the positive signal effect of D&O insurance will not be influenced by these concerns. This study uses the standard deviation of ROE as dependent variable, and the standard deviation ROA, EPS, debt-asset ratio and short term investment of firms for robustness check. If there is no moral hazard and opportunistic behavior in the Taiwan

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Information and Insiders, 14 CONN. INS. L.J. 75, 103 (2007).

127. Peter Egger et al., *Heterogeneous Beliefs and the Demand for D&O Insurance by Listed Companies*, 82 J. RISK & INS. 823, 844-45 (2015), http://onlinelibrary.wiley.com/doi/10.1111/jori.12082/pdf.

market, the purchase of D&O insurance and its coverage shall be not significantly related to these dependent variables. In this way, purchase or coverage of D&O insurance should be not related to the standard deviation of ROE, ROA, EPS, debt-asset ratio and short-term investment of firms. In addition to the proxy variable of D&O insurance, the quality of the corporate governance of firms is used as control variables. In general, firms having better corporate governance might have less volatility in returns.[128] Hence, this paper hypothesizes that the quality of corporate governance is negatively related to the volatility in returns, which contains the standard deviation of ROE, ROA, EPS, debt-asset ratio and short term investment of firms.

2. *Variable*

Regarding the evaluation of opportunism, the standard deviation of revenues is usually used as proxy variables. When testing managerial opportunism caused by D&O insurance, John M. R. Chalmers, Larry Y. Dann and Jarrad Harford use standard deviation of revenues and operating income as proxy variables.[129] Jens Hagendorff, Ignacio Hernando, Maria J. J. Nieto and Larry D. Wall use the standard deviation of ROE as a proxy variable of riskiness.[130] Michael Bradley and Dong Chen, similarly, use standard deviation of monthly stock returns as a dependent variable in assessing corporate risk-taking.[131] In measuring the volatility of firms' accounting performance, Seunghan Nam uses the standard deviation of ROE to test its volatility.[132] The reason is that ROE is a more relevant measure from the viewpoint of shareholder, and other proxy variables such as ROA, EPS and growth of EPS also have similar results. This study follows

128. Firms with poor corporate governance usually have poor performance, poor profit and higher volatility. *See* Laurence J. Stybel & Maryanne Peabody, *A New Balance of Power Means New Boardroom Opportunity for General Counsel*, 23 OF COUNSEL 9, 9 (2004). Besides, CalPERS' stated goal is also to "join in the dialogue of corporate governance and reduce volatility and increase long-term share values." *See* Deborah J. Martin, *The Public Piggy Bank Goes to Market: Public Pension Fund Investment in Common Stock and Fund Trustees' Social Agenda*, 29 SAN DIEGO L. REV. 39, 45 (1992). Moreover, problems of corporate governance would cause market volatility. *See* Yuwa Wei, *Volatility of China's Securities Markets and Corporate Governance*, 29 SUFFOLK TRANSNAT'L L. REV. 207, 208 (2006). In emerging market of Brazil, firms satisfying better corporate governance standards are less sensitive to changes in market and have less volatility in stock prices. *See* Ronald J. Gilson et al., *Regulatory Dualism as a Development Strategy: Corporate Reform in Brazil, the United States, and the European Union*, 63 STAN. L. REV. 475, 501 (2011).

129. Chalmers et al., *supra* note 123, at 625.

130. Jens Hagendorff et al., *What Do Premiums Paid for Bank M&As Reflect? The Case of the European Union* 21 (Banco de Espana, Working Paper No. 1011, 2010), http://ssrn.com/abstract=1592887.

131. Michael Bradley & Dong Chen, *Corporate Governance and the Cost of Debt: Evidence from Director Limited Liability and Indemnification Provisions*, 17 J. CORP. FIN. 83, 92 (2011).

132. Seunghan Nam, *The Impact of Non-Audit Services on Capital Markets* 18 (2006), http://ssrn.com/abstract=693422.

previous literature and uses the standard deviation of ROE as the proxy variable of opportunistic behavior.[133] They are used as the dependent variables of regressions. For a test of robustness, this study uses standard deviation of ROA, EPS, debt-asset ratio and short-term investment as dependent variables in different panels. Regarding independent variables, the dummy variable, purchased insurance or not, and the amount of coverage are used as the proxy variables for D&O insurance. The variables about corporate governance are applied as control variables, including remuneration for directors, return on equity, the number of independent directors, the number of controlled directors, shares owned by director, duality of CEO and COB, debt-asset ratio and prior significant litigation.

C. *Empirical Result and Analysis*

1. *Descriptive Analysis*

The results show that the insured firms have less volatility in ROA, but more volatility in EPS and short-term investment. This implies firms might have more opportunistic behavior in EPS and short-term investment after D&O purchase. However, the differences between firms with and without D&O insurance are not significant in ROE and debt-asset ratio. Consequently, it is suspicious that insured firms have more volatility in returns and investments. The result of descriptive analysis is reported in Table 7.

Table 7: Comparison between Firms without and with D&O Insurance (3)

	Firms without D&O		Firms with D&O		Total	
	Mean	N	Mean	N	Mean	N
S_ROE	3.5135	3409	3.1864	4880	3.3209	8289
*S_ROA**	1.4555	3409	1.2971	4880	1.3622	8289
*S_EPS**	.5750	3407	.6496	4880	.6189	8287
S_DAratio	34.6412	3409	63.6736	4880	51.7335	8289
*S_Sti**	153349.33	3409	553883.44	4880	389156.60	8289

Source: Author
Note: * indicates that the difference is significant in independent sample test.

133. Similarly, Standard deviation of ROE is also often used as a proxy variable for the risk of insurers. *See* J. David Cummins & Gregory P. Nini, *Optimal Capital Utilization by Financial Firms: Evidence from the Property-Liability Insurance Industry*, 21 J. FIN. SERV. RES. 15, 23 (2002).

2. *Regression Analysis*

As the previous tests, binary variable insurance purchase is used in the first panel, and numeric variable nature logarithm of coverage is used in the second penal. Standard deviations of ROE, ROA, EPS, debt-asset ratio and short-term investment are used as dependent variables in respective regressions. In the first panel, D&O insurance purchase is not positively significant in these regressions except when dependent variable is standard deviation on short-term investment. This implies no statistically significant evidence proving that the purchase of D&O insurance will increase opportunistic behavior. Moreover, D&O insurance purchase is negatively significant when dependent variable is standard deviation on ROA, implying insurance purchase correlates to even less volatility. In the second panel, insurance coverage is negatively significant when dependent variable is standard deviation of ROE and ROA, and not significant in other specifications. Clearly, it does not support the concern that firms with more coverage may have some intention to conduct opportunistic behavior, and implies less volatility in ROE and ROA. Also, for litigation risk, it is generally and positively significant in many specifications. This supports the concern that firms with more litigation risk usually have more volatility in investment. In conclusion, all these results demonstrate that the D&O increase purchase and coverage is not positively and significantly correlated to the variance in earnings and investment behavior. In other words, no consistent evidence is found to prove a positive correlation between D&O insurance and the opportunistic behavior and moral hazard of firms. The detailed results are reported from Table 8 and 9.

D. *Summary*

In this section, this study empirically tests whether D&O insurance is correlated to opportunistic behavior and moral hazard. Empirical evidence shows that the purchase of D&O insurance and its coverage are not significantly and negatively correlated to variances of earnings and investments. In consequence, even though some scholars argue that insurance may cause opportunistic behavior and moral hazard or even damage firms eventually, the empirical work does not find such significant evidence. Hence, the previous tests about the monitoring and signal effect of D&O insurance may not be affected by opportunistic behavior and moral hazard in Taiwan. And the previous proposal to limit D&O insurance may need more evidence to be supported and justified in Taiwan.

Table 8: Result of Regressions with Panel Data (3)

	(1)	(2)	(3)	(4)	(5)
	S_ROE	S_ROA	S_EPS	S_DAratio	S_Sti
Purchase	-0.0800	-0.0752**	0.0554	61.66	67885.2***
	(-1.03)	(-2.59)	(1.44)	(1.21)	(3.66)
Industry	0.00604	-0.00350	-0.000162	7.516*	486.7
	(0.70)	(-0.63)	(-0.09)	(2.41)	(0.14)
ROE	-0.0598	-0.00980	0.000661	0.693	5864.6***
	(-1.87)	(-1.64)	(0.19)	(0.46)	(4.30)
Remuneration	-0.0151	-0.000582	0.00188	3.299	13731.1*
	(-1.32)	(-0.23)	(1.87)	(1.55)	(2.34)
Indptdirector	-0.255***	-0.0174	0.0231*	-40.24	79795.7***
	(-5.86)	(-0.85)	(1.99)	(-1.37)	(3.98)
Auditcomitee	-0.635*	-0.146	0.00691	-57.84***	1400111.4***
	(-2.02)	(-1.82)	(0.08)	(-3.41)	(4.07)
Ctrldirector	-0.241***	-0.0943***	-0.0298***	-12.87**	12475.1
	(-5.52)	(-6.72)	(-13.68)	(-3.00)	(1.12)
Sdirector	0.0192**	0.00192	0.000759	-0.333	-7383.2**
	(2.80)	(0.95)	(1.73)	(-1.04)	(-2.99)
Dual	0.619*	0.208**	-0.00792	-32.32	-230547.1***
	(2.43)	(2.70)	(-0.68)	(-0.89)	(-6.88)
DAratio	0.00617***	-0.0000514	0.0000619*	0.410***	2076.7*
	(9.78)	(-0.71)	(2.47)	(5.83)	(2.30)
Litigation	0.313*	0.0883*	0.0491***	-8.582*	89696.8**
	(2.36)	(2.46)	(3.33)	(-2.31)	(2.81)
Constant	3.140***	1.598***	0.576***	-15.48	-132515.5
	(13.21)	(8.60)	(18.66)	(-0.37)	(-1.85)
N	6401	6401	6398	6401	6401
R^2	0.1379	0.0282	0.0121	0.0037	0.0735
Hausman test	0.0000	0.0000	0.0000	0.9711	0.0000
Model	xtscc	xtscc	xtscc	re	xtscc
Mean VIF	1.96	1.96	1.96	1.96	1.96

Source: Author

Note: *t* statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Result of Regressions with Panel Data (4)

	(1)	(2)	(3)	(4)	(5)
	S_ROE	S_ROA	S_EPS	S_DAratio	S_Sti
Coverage	-0.000336*	-0.000114**	0.0000582	0.103	616.4
	(-2.14)	(-3.22)	(1.12)	(1.12)	(1.86)
Industry	0.00434	-0.00436	-0.000242	7.542*	1102.2
	(0.47)	(-0.79)	(-0.14)	(2.44)	(0.34)
ROE	-0.0342	-0.00913	0.00105	5.328	5324.5***
	(-0.95)	(-1.52)	(0.31)	(1.33)	(4.20)
Remuneration	-0.0194	-0.000439	0.00193	2.025	12039.1*
	(-1.29)	(-0.17)	(1.82)	(1.54)	(2.41)
Indptdirector	-0.294***	-0.0258	0.0223	-40.21	70191.5***
	(-7.29)	(-1.08)	(1.60)	(-1.52)	(4.63)
Auditcomitee	-0.557	-0.128	0.0100	-88.47***	1150799.4**
	(-1.55)	(-1.65)	(0.12)	(-3.98)	(3.15)
Ctrldirector	-0.271***	-0.0942***	-0.0305***	-19.42**	15236.4
	(-6.59)	(-6.72)	(-12.39)	(-3.10)	(1.79)
Sdirector	0.0167**	0.00216	0.000681	-0.747	-7144.8**
	(2.75)	(1.06)	(1.32)	(-1.28)	(-3.01)
Dual	0.673**	0.191*	0.0229	-10.47	-196490.5***
	(2.67)	(2.45)	(1.21)	(-0.34)	(-7.12)
DAratio	0.00629***	-0.0000471	0.0000617*	0.424***	2052.2*
	(10.02)	(-0.65)	(2.23)	(5.39)	(2.26)
Litigation	0.307*	0.0820*	0.0490***	-3.215	83863.8**
	(2.30)	(2.28)	(3.81)	(-0.63)	(3.03)
Constant	3.297***	1.590***	0.599***	27.95	-166103.0**
	(11.31)	(8.56)	(18.57)	(0.85)	(-2.97)
N	6625	6625	6622	6625	6625
R^2	0.1218	0.0275	0.0096	0.0030	0.0771
Hausman test	0.0000	0.0000	0.0009	0.9626	0.0000
Model	xtscc	xtscc	xtscc	re	xtscc
Mean VIF	1.70	1.70	1.70	1.70	1.70

Source: Author

Note: *t* statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

V. LEGAL IMPLICATIONS FOR D&O INSURANCE IN TAIWAN

A. *Improving D&O Insurance and Regulation*

The empirical result fails to support the monitoring function of D&O insurance. If this function is expected to be developed deeper in the future, in the long-term, the litigation systems and relevant regulations should be improved first. Many details in the regulations and insurance policies in Taiwan are not as complete as the United States. For example, some inconsistencies and conflicts in insurance policies also cause confusion.[134] These not only influence the compensation for directors and corporations, but also the incentives to purchase D&O insurance. Also, the signal effect of D&O insurance implies that investors in the market may rely on such information. Thus, the underwriting of insurers and the relevant regulation would be more important. Compared with the United States, the authorities concerned in Taiwan have less experience in supervising the insurer due to the relatively short history of the development of D&O insurance. Even though the evidence proves that no adverse selection problem exists in the current market, relevant regulation will be necessary if these problems occur.

B. *Compulsory Insurance*

Even though D&O insurance is promoted and even proposed to be mandatory in Taiwan, this study proposes that compulsory D&O insurance may not be necessary in Taiwan. As seen in the previous analysis, the litigation risk to directors and officers is not that high and significant in regression analysis. Also, according to the statistics about civil cases terminated in the first instance by the district courts in 2015, there are 3157 case concerning Company Act and 13 cases concerning Securities trading. In Company Act cases, excluding 2667 for exclusion judgements and 395 other cases, there are 41 cases concerning withdrawal of shareholders meeting resolutions, 49 cases concerning invalidation of shareholders meeting resolutions, and only 5 cases concerning company suing director or

134. Lu Shih-Ning (盧世寧), *Xianxing D&O (Gongsi Dongjianshi Zhongyao Zhiyuan) Zeren Baoxian Zhi Pings-Jian Pingsi Gongsifa Xiuzhenghou Yingxiang* (*現行D&O(公司董監事重要職員)責任保險之評析兼評析公司法修正後之影響*) [*Comments on Directors' and Officers' Insurance in Taiwan*], 43 TAIWAN BENTU FAXUE ZAZHI (台灣本土法學雜誌) [TAIWAN L.J.] 157, 180 (2003). Also, the special issue in Taiwan regarding "legal person as corporate director", usually causes ambiguity in interpreting D&O insurance clauses which generally transplanted from common law countries. *See* Chun-Yuan Chen (陳俊元), *Faren Dongjianshi Yu Dongjianshi Zeren Baoxian* (*法人董監事與董監事責任保險*) [*Legal Persons as Corporate Directors and D&O Insurance*], 19 QUANGUO LUSHI (全國律師) [TAIWAN B.J.] 78 (2015).

auditor.[135] The numbers are still limited and not significantly increased, compared with the statistics in 1995--68 cases concerning withdrawal of shareholders meeting resolutions, 20 cases concerning invalidation of shareholders meeting resolutions, and 7 cases concerning company suing director or auditor.[136] The main purpose of insurance is indemnifying the loss of the insured.[137] If firms have no risk of being sued and no demand for indemnification, it is unpersuasive to require them to buy insurance. Otherwise, that might conflict with the fundamental purpose of insurance. Moreover, considering the previous empirical results in which D&O insurance is a possible attraction to the market, and this should incentivize firms to purchase D&O insurance and mandatory insurance is not necessary. Hence, this research argues that compulsory D&O insurance rule in Taiwan is suspicious.

C. *Limitation on Insurance*

In the United States, the D&O insurance significantly decreases the deterrence effect of the securities litigation,[138] some scholars, such as Janet Cooper Alexander, suggest making penalties uninsurable, limiting insurance coverage and thus letting directors pay for themselves to maintain the deterrence effect.[139] Similarly, Narjess Boubakri and Nabil Ghalleb test the Canadian market and find that the problem of asymmetric information and moral hazard is obvious.[140] Insurer cannot distinguish opportunistic risk or charge higher premiums to those who have high opportunistic risk. Their evidence also shows that mandatory reporting is not helpful.[141] Under such circumstances, regulation and limitation are recommended by them.[142] However, the situation in Taiwan is different. The maturity and popularity of D&O insurance are far less than in the United States and Canada. Needless to say the problem where D&O insurance over rampant and thus decrease the function of litigation. It should be unnecessary to limit the coverage of D&O insurance to maintain deterrence in Taiwan currently. Of course, deductible is helpful for controlling moral hazard, but compulsory deductibles or limitations on coverage may be redundant for Taiwan. According to the previous analysis, no evidence supports the existence of

135. JUD. YUAN, TAIWAN, http://www.judicial.gov.tw/en/ (last visited Aug. 31, 2016).
136. *Id*.
137. 44 C.J.S. *Insurance* § 2 (2015).
138. Baker & Griffith, *supra* note 28, at 831.
139. Janet Cooper Alexander, *Rethinking Damages in Securities Class Actions*, 48 STAN. L. REV. 1487, 1515 (1996).
140. Boubakri & Ghalleb, *supra* note 88, at 30.
141. *Id*. at 30.
142. *Id*.

risk taking behavior. Hence, imposing some limitations on D&O insurance transaction are unnecessary in current Taiwan.

D. *Implications for Future Research*

1. *The Development of D&O Insurance in Corporate Governance in Taiwan*

Regarding the prospect of the role of D&O insurance in corporate governance in Taiwan, the possible development could be divergent. For example, D&O insurance could be more prosperous because of the improvement of government and its signal effect. However, when transparency of corporate governance is improved and more mature, D&O insurance would be less important, especially for the purpose of singling. Also, if litigation risk increases, insurance premium will also create mitigating effects to the loss of insurer. Due to the increasing premium, firms may try to find other substitutes for D&O insurance. Thus, the prospect of D&O insurance might be suspicious.

A specific answer for this issue still needs for more exploration in the future, but this research may tentatively suggest that the future of D&O insurance might be perceived by the development of litigation system, like shareholder and collective litigation. As mentioned earlier, shareholder litigation does not function actively in Taiwan, and the litigation led by minority shareholder or individual investor is difficult. In this way, the role of Securities and Futures Investors Protection Center would be more important. However, such non-profit organization (NPO) has the purpose to pursue public interest, and maximize social welfare instead of personal welfare.[143] NPO usually files lesser litigations than the system led by private attorney.[144] Furthermore, the Securities and Futures Investors Protection Center is not perfect yet. Its transparency and independence of this protection center has been argued and revolution for this is suggested.[145] For example, the reasons for the decisions and settlement terms should be published,[146] and the appointment of board should be more independent from the involvement of the authorities.[147]

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143. Curtis J. Milhaupt, *Nonprofit Organizations as Investor Protection: Economic Theory and Evidence from East Asia*, 29 YALE J. INT'L L. 169, 202 (2004).

144. *Id.* at 175. Yu-Hsin Lin, *Modeling Securities Class Actions outside the United States: The Role of Nonprofits in the Case of Taiwan*, 4 N.Y.U. J. L. & BUS. 143, 179-80 (2007).

145. Wallace Wen-Yeu Wang & Jian-Lin Chen, *Reforming China's Securities Civil Actions: Lessons from PSLRA Reform in the U.S. and Government-Sanctioned Non-Profit Enforcement in Taiwan*, 21 COLUM. J. ASIAN L. 115, 151 (2008).

146. *Id.* at 151.

147. *Id.*

Hence, observing the development of litigation system might be a breakthrough point for following research about D&O insurance in corporate governance. If the litigation system is still limited in the future, then the demand for substantial reimbursement from insurance would be not that necessary. Thus, the signal function might be an important consideration in D&O insurance purchase. In this case, if there is other mechanism improving the transparency of corporate governance, D&O insurance will lose its advantage easily. In contrast, if litigation system is indeed improved, this may cause more litigation risks and more demands for insurance compensation. Thus, even though corporate governance is even more transparent in the future, the basic function for reimbursement might still support the survival of D&O insurance. Conversely, high litigation risk might also cause rising premiums and then make D&O insurance less attractive. It is also possible that insurers are not willing to offer insurance for such high risk. Thus, evaluating the development of litigation system might provide more clues for the future of D&O insurance.

2. *Monitoring Function from the Plaintiff*

As noted in the introduction, this research tests the monitoring and alternative hypothesis. For the former, this study follows major literature to focus on the mechanisms from insurer, like the offering of D&O insurance, insurance coverage, identity of insurer and so on. However, it is also possible for some monitoring effect that comes from plaintiff and its attorney. In the litigation where plaintiff sues the management of insured firm, D&O insurance provides incentive for the plaintiff and his attorney to monitor the insured firm, to collect more evidence, and then to increase the probability to win the case. The previous empirical works does not include the test for this effect, but some thoughts in this research may be helpful for the following study on this issue.

A possible hypothesis for future research is that the monitoring function from the plaintiff is suspicious, or lesser than the monitoring function from the insurer. Like the analysis in previous section, the litigation system in Taiwan, which is not identical to the United States might be the major concern. Litigation led by minority shareholder is still not prosperous, and class action is majorly led by Securities and Futures Investors Protection Center. Such non-profit organization has public interest purpose, which can be found in the criteria in choosing case and avoiding frivolous suits.[148] Also, Securities and Futures Investors Protection Center recruits full-time

148. Securities and Futures Investors Protection Center currently focuses on four types of cases, including making false financial statements, producing false prospectuses, influencing share prices illegally, and insider trading, SEC. & FUTURES INV. PROTECTION CTR., *supra* note 13.

attorney with salary for litigation service,[149] and contingency fee is not allowed in Taiwan. This provides less possibility for the monitoring effect which comes from the eagerness of attorney to win more compensation form D&O insurance coverage. Thus, the observation of litigation system might shed light on the future research about the monitoring effect from plaintiff in D&O insurance.

VI. CONCLUDING REMARKS

This paper has discussed monitoring hypothesis and tested it within the context of Taiwan. The empirical evidence shows that the monitoring hypothesis is not supported. Firms with better corporate governance and less risk intend to purchase more D&O insurance. In contrast, firms with bad corporate governance and more risk intend to purchase less D&O insurance. A possible alternative explanation of this phenomenon is signal hypothesis--firms with good corporate governance are usually more concerned about corporate governance. This research also further tests the signal hypothesis and opportunistic problem. The evidence shows that the signal hypothesis is supported but not for opportunistic problem.

Based on these empirically findings, this paper concludes the following implications for legal policies. First of all, considering the importance of D&O insurance, no matter one is departing from the perspective of indemnity or corporate governance, the current inconsistencies and conflicts in insurance policies should be improved. Secondly, mandatory D&O insurance cannot be justified, because the litigation risk is still not significant in Taiwan. Finally, the development of D&O insurance in Taiwan is far from over rampant, and thus statutory limitation and cap for insurance are not necessary, either. The characteristics of D&O insurance found in this research are worthwhile of greater notice, whether it is in theory, in research, in practice, or in legislative consideration.

149. *Id.*

REFERENCES

44 C.J.S. Insurance § 2 (2015).

Alexander, J. C. (1996). Rethinking Damages in Securities Class Actions. *Stanford Law Review, 48*, 1487-1537.

Baker, T. & Griffith, S. J. (2007). Predicting Corporate Governance Risk: Evidence from the Directors' & Officers' Liability Insurance Market. *University of Chicago Law Review, 74*, 487-544.

Baker, T. & Griffith, S. J. (2007). The Missing Monitor in Corporate Governance: The Directors' and Officers' Liability Insurer. *Georgetown Law Journal, 95*, 1795-1842.

Baker, T. & Griffith, S. J. (2009). How the Merits Matter: Directors' and Officers' Insurance and Securities Settlements. *University of Pennsylvania Law Review, 157*, 755-832.

Bebchuk, L. A., Cohen, A. & Ferrell, A. (2009). What Matters in Corporate Governance?. *Review of Financial Studies, 22(2)*, 783-831.

Bhagat, S. & Black, B. (1999). The Uncertain Relationship between Board Composition and Firm Performance. *Business Lawyer, 54*, 921-963.

Bhagat, S. & Romano, R. (2002). Event Studies and the Law: Part II: Empirical Studies of Corporate Law. *American Law and Economics Review, 4*, 380-423.

Bhagat, S., Brickley, J. A. & Coles, J. L. (1987). Managerial Indemnification and Liability Insurance: The Effect on Shareholder Wealth. *The Journal of Risk and Insurance, 54*(4), 721-736.

Bhimania, A., Gulamhussen, M. A. & Lopes, S. D.-R. (2010). Accounting and Non-Accounting Determinants of Default: An Analysis of Privately-Held Firms. *Journal of Accounting and Public Policy, 29*(6), 517-532.

Black, B. S. (2001). Does Corporate Governance Matter? A Crude Test Using Russian Data. *University of Pennsylvania Law Review, 149*, 2131-2149.

Black, B. S., Jang, H. & Kim, W. (2006). Does Corporate Governance Predict Firms' Market Values? Evidence from Korea. *Journal of Law, Economics, and Organization, 22*, 366-413.

Boubakri, N. & Ghalleb, N. (2008). Does Mandatory Disclosure of Directors' and Officers' Liability Insurance Curb Managerial Opportunism? Evidence from the Canadian Secondary Market. Retrieved from http://69.175.2.130/~finman/Reno/Papers/Does_Mandatory_Disclosure_Curb_Managerial_Opportunism.pdf.

Bowen, R. M., Rajgopal, S. & Venkatachalam, M. (2005). *Accounting Discretion, Corporate Governance and Firm Performance*. Retrieved from http://ssrn.com/abstract=367940.

Boyer, M. M. & Amandine, H. (2009). *Protecting Directors and Officers from Liability Arising from Aggressive Earnings Management.* Retrieved from http://ssrn.com/abstract=1504208.

Boyer, M. M. & Delvaux-Derome, M. (2002). The Demand for Directors' and Officers' Insurance in Canada. Retrieved from http://ideas.repec.org/p/cir/cirwor/2002s-72.html.

Boyer, M. M. (2004). Is the Demand for Corporate Insurance a Habit? Evidence of Organizational Inertia from Directors' and Officers' Insurance. Retrieved from http://ideas.repec.org/p/cir/cirwor/2004s-33.html.

Boyer, M. M. (2005). *Directors' and Officers' Insurance and Shareholder Protection*. Retrieved from http://ssrn.com/abstract=886504.

Boyer, M. M. (2007). Three Insights from the Canadian D&O Insurance Market: Inertia, Information and Insiders. *Connecticut Insurance Law Journal, 14*, 75-105.

Bradley, M. & Chen, D. (2011). Corporate Governance and the Cost of Debt: Evidence from Director Limited Liability and Indemnification Provisions. *Journal of Corporate Finance, 17*, 83-107.

Brown, L. D. & Caylor, M. L. (2004). Corporate Governance and Firm Performance. Retrieved from http://ssrn.com/abstract=586423.

Brudney, V. (1982). The Independent Director-Heavenly City or Potemkin Village?, *Harvard Law Review, 95*, 597-659.

Caituan Faren Baoxian Shiye Fazhan Zhongxin (財團法人保險事業發展中心) [Taiwan Insurance Institute]. Retrieved from http://www.tii.org.tw/.

Cameron. A. C. & Trivedi, P. K. (2009). *Microeconometrics Using Stata*. Texas: Stata Press.

Carapeto, M., Lasfer, M. & Machera, K. (2005). Does Duality Destroy Value?. Retrieved from http://ssrn.com/abstract=686707.

Chakrabarti, R., Subramanian, K. & Tung, F. (2010). Independent Directors and Firm Value: Evidence from an Emerging Market. Retrieved from http://ssrn.com/abstract=1631710.

Chalmers, J. M. R., Dann, L. Y. & Harford, J. (2002). Managerial Opportunism? Evidence from Directors' and Officers' Insurance Purchases. *The Journal of Finance, 57*(2), 609-636.

Chen, C.-Y. (陳俊元) (2015). Faren Dongjianshi Yu Dongjianshi Zeren Baoxian (法人董監事與董監事責任保險) [Legal Persons as Corporate

Directors and D&O Insurance]. *Quanguo Lushi* (*全國律師*) [*Taiwan Bar Journal*]. *19*(8), 78-89.

Chen, T.-J. (陳彩稚) & Pang, C.-H. (龐嘉惠) (2008). Dongjianshi Ji Zhongyao Zhiyuan Zeren Baoxian Zhi Xuqiu Yinsu Fenxi (*董監事暨重要職員責任之保險需求因素分析*) [An Analysis of Determinants of the Corporate Demand for Directors' and Officers' Liability Insurance]. *Taida Guanli Luncong* (*臺大管理論叢*) [*National Taiwan University Management Review*]*, 18*(2), 171-195.

Chung, H. H. & Wynn, J. P. (2008). Managerial Legal Liability Coverage and Earnings Conservatism. *Journal of Accounting and Economics, 46*, 135-153.

Chung, H. H., Wynn, J. P. & Yi, H. (2008). Managerial Opportunism, Legal Liability Rule and Audit Pricing. Retrieved from http://www.ibrarian.net/navon/paper/Managerial_Opportunism__Legal_Liability_Rule__and.pdf?paperid=13420340.

Core, J. E. (1997). On the Corporate Demand for Director' and Officers' Insurance. *The Journal of Risk and Insurance, 64*, 63-87.

Core, J. E. (2000). The Directors' and Officers' Insurance Premium: An Outside Assessment of the Quality of Corporate Governance. *The Journal of Law, Economics & Organization, 16*, 449-477.

Cummins, J. D. & Nini, G. P. (2002). Optimal Capital Utilization by Financial Firms: Evidence from the Property-Liability Insurance Industry. *Journal of Financial Services Research, 21*(1), 15-53.

del Rio, O. (2017). Corporate Governance in Russia. In Thomson Reuters's Editorial Staff (Eds.), *Laws of International Trade* (§ 151: 3-3). Minnesota, MN: Thomson Reuters.

Dobiac, J. (2008). I Came, I Saw, I Underwrote: D & O Liability Insurance's Past Underwriting Practices and Potential Future Directions. *Connecticut Insurance Law Journal, 14*, 487-519.

Edie, J. A. (2003). Directors and Officers Liability Issues: An Update on D&O Insurance. *2003 WL 22002122*.

Egger, P., Radulescu, D. & Rees, R. (2015). Heterogeneous Beliefs and the Demand for D&O Insurance by Listed Companies. *Journal of Risk and Insurance, 82*(4), 823-852. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/jori.12082/pdf.

Garner, B. A. & Black, H. C. (Eds.). (2014). *Black's Law Dictionary* (10th ed.). Minnesota, MN: Thomson Reuters.

Gilson, R. J. & Milhaupt, C. J. (2005). Choice as Regulatory Reform: The Case of Japanese Corporate Governance. *American Journal of Comparative Law, 53*, 343-376.

Gilson, R. J., Hansmann, H. & Pargendler, M. (2011). Regulatory Dualism as a Development Strategy: Corporate Reform in Brazil, the United States, and the European Union. *Stanford Law Review, 63*, 475-537.

Griffith, S. J. (2006). Uncovering a Gatekeeper: Why the SEC Should Mandate Disclosure of Details Concerning Directors' and Officers' Liability Insurance Policies. *University of Pennsylvania Law Review, 154*, 1147-1208 (2006).

Gutiérrez, M. (2003). An Economic Analysis of Corporate Directors' Fiduciary Duties. *The RAND Journal of Economics, 34*(3), 516-535.

Hagendorff, J., Hernando, I., Nieto, M. & Wall, L. D. (2010). What Do Premiums Paid for Bank M&As Reflect? The Case of the European Union. *Banco de Espana, Working Paper No. 1011*. Retrieved from http://ssrn.com/abstract=1592887.

Hickman, M. M. (1984). Protecting Intellectual Property in Taiwan-Non-Recognized United States Corporations and Their Treaty Right of Access to Courts. *Washington Law Review, 60*, 117-140.

Holderness, C. G. (1990). Liability Insurers as Corporate Monitors. *International Review of Law & Economics, 10*, 115-129.

Hosmer, D. W. & Lemeshow, S. (2000). *Applied Logistic Regression*. Hoboken, NJ: John Wiley & Sons.

In re Apple Computer, Inc. Derivative Litig., No. C 06-4128 JF (HRL), 2008 WL 4820784, at 2 (N.D. Cal. Nov. 5, 2008).

Jinrong Jiandu Guanli Weiyuanhui (金融監督管理委員會) [Financial Supervisory Commission]. Retrieved from http://www.fsc.gov.tw/ch/index.jsp.

Judicial Yuan, Taiwan. Retrieved from http://www.judicial.gov.tw/en/.

Kalchev, G. (2004). The Demand for Directors' and Officers' Liability Insurance by US Public Companies. Retrieved from http://ssrn.com/abstract=565183.

Kim, I. Y. (2005). Directors' and Officers' Insurance and Opportunism in Accounting Choice. Retrieved from http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2006-Madrid/papers/764024_full.pdf.

Kumar, J. (2004). Agency Theory and Firm Value in India. *Indira Gandhi Institute of Development Research*. Retrieved from https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=501802.

Kuo, C.-S. (2007). *The Pricing and Determinants of the Discretionary Component of Employee Stock Option Value*. Arlington, VA: The University of Texas at Arlington Press.

Laby, A. B. (2004). Resolving Conflicts of Duty in Fiduciary Relationships. *American University Law Review, 54*, 75-149.

Lawless, R. M., Ferris, S. P. & Bacon, B. (1998). The Influence of Legal Liability on Corporate Financial Signaling. *Journal of Corporation Law, 23*, 209-240.

Lee, L. L. C. (Fall 1999/Spring 2000). Taiwan's Current Banking Development Strategy: Preparing for Internationalization by Preventing Insider Lending. *UCLA Pacific Basin Law Journal, 17*, 166-225.

Lin, A. J.-G. (2009). Common Law Influences in Private Law-Taiwan's Experiences Related to Corporate Law. *National Taiwan University Law Review, 4*, 107-140.

Lin, C., Officer, M. S. & Zou, H. (2010). *Directors' and Officers' Liability Insurance and Acquisition Outcomes*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1641645.

Lin, C., Officer, M. S., Wang, R. & Zou, H. (2011). *Directors' and Officers' Liability Insurance and the Cost of Debt*. Retrieved from http://ssrn.com/abstract=1865679.

Lin, C., Officer, M. S., Wang, R. & Zou, H. (2013). Directors' and Officers' Liability Insurance and Loan Spreads. *Journal of Financial Economics, 110*, 37-60.

Lin, Y.-H. (2007). Modeling Securities Class Actions outside the United States: The Role of Nonprofits in The Case of Taiwan. *NYU Journal of Law & Business, 4*, 143-221.

Lo, K. & Lys, T. Z. (2000). The Ohlson Model: Contribution to Valuation Theory, Limitations, and Empirical Applications. Retrieved from http://ssrn.com/abstract=210948.

Lu, S.-N. (盧世寧) (2003). Xianxing D&O (Gongsi Dongjianshi Zhongyao Zhiyuan) Zeren Baoxian Zhi Pings-Jian Pingsi Gongsifa Xiuzhenghou Yingxiang (現行D&O(公司董監事重要職員)責任保險之評析兼評析公司法修正後之影響) [Comments on Directors' and Officers' Insurance in Taiwan]. *Taiwan Bentu Faxue Zazhi* (*台灣本土法學雜誌*) [*Taiwan Law Journal*], *43*, 157-182.

Market Observation Post System. Retrieved from http://emops.twse.com.tw/server-java/t58query.

Martin, D. J. (1992). The Public Piggy Bank Goes to Market: Public Pension Fund Investment in Common Stock and Fund Trustees' Social Agenda. *San Diego Law Review, 29*, 39-65.

Milhaupt, C. J. (2004). Nonprofit Organizations as Investor Protection: Economic Theory and Evidence from East Asia. *Yale Journal of International Law, 29*, 169-207.

Nam, S. (2006). The Impact of Non-Audit Services on Capital Markets. Retrieved from http://ssrn.com/abstract=693422.

O'Sullivan, N. (1997). Insuring the Agents: The Role of Directors' and Officers' Insurance in Corporate Governance. *The Journal of Risk and Insurance, 64*, 545-556.

Oh, A. (2009). *Insuring against Another Enron: The Role of Cross-listing Status of Canadian Firms on the Purchase of Directors' and Officers' Insurance in the aftermath of Sarbanes-Oxley Act of 2002* (Unpublished Senior Honors Thesis, Department of Policy Analysis and Management Cornell University). Retrieved from http://ecommons.cornell.edu/bitstream/1813/14231/2/AnnaOhFinalThesis1.pdf.

Olson, J. F., Hatch, J. O., Sagalow, T. R. & Publisher's Editorial Staff (2016). *Director & Officer Liability: Indemnification and Insurance* (2016-2017 ed.). Minnesota, MN: Thomson Reuters.

Palmiter, A. R. (1989). Reshaping the Corporate Fiduciary Model: A Director's Duty of Independence. *Texas Law Review, 67*, 1351-1463.

Park, J. (June 14, 2005). *The Effect of Directors' and Officers' Liability Insurance and Indemnification on Voluntary Disclosure: Evidence from Canadian Firms* (unpublished Ph.D. dissertation). Purdue University: Indiana, U.S.A.

Schouten, M. C. (2009). The Case for Mandatory Ownership Disclosure. *Stanford Journal of Law, Business, and Finance, 15*, 127-182.

Security and Futures Investors Protection Center. Retrieved from http://www.sfipc.org.tw/MainWeb/Index.aspx?L=2.

Shangshi Shanggui Gongsi Zhili Shiwu Shouze (上市上櫃公司治理實務守則) [Corporate Governance Best-Practice Principles for TSEC/GTSM Listed Companies], October 6, 2002 (Taiwan).

Stybel, L. J. & Peabody, M. (2004). A New Balance of Power Means New Boardroom Opportunity for General Counsel. *Of Counsel, 23*(5), 9-11.

Taiwan Economic Journal Company Limited. Retrieved from http://www.finasia.biz/ensite/.

Taiwan Zhengquan Jiaoyisuo (臺灣證券交易所) [Taiwan Stock Exchange Corporation]. Retrieved from http://www.twse.com.tw/ch/index.php.

Wallace, P. E. (2003). Accounting, Auditing and Audit Committees after Enron, Et Al.: Governing outside the Box without Stepping off the Edge in the Modern Economy. *Washburn Law Journal, 43*, 91-120.

Wang, W. W.-Y. & Chen, J.-L. (2008). Reforming China's Securities Civil Actions: Lessons from PSLRA Reform in the U.S. and

Government-Sanctioned Non-Profit Enforcement in Taiwan. *Columbia Journal of Asian Law, 21*, 115-160.

Wei, Y. (2006). Volatility of China's Securities Markets and Corporate Governance. S*uffolk Transnational Law Review, 29*, 207-236.

Youngman, I. (1999). Directors' and Officers' Liability Insurance: A Guide to International Practice. London, England: Woodhead.

董監事責任保險之功能與訴訟風險：臺灣之法實證分析

陳 俊 元

摘 要

本文以實證方法分析董監事責任保險於公司治理之功能，並檢驗了根本之問題：董監事之訴訟風險。本文主張，董監事之訴訟風險由於與保險基本之損失填補功能相關，在立法建議前應予釐清。本文首先探討董監事責任保險之需求與功能是否會受到訴訟風險之影響。而依據監督假說，公司治理品質較弱之公司應較可能購買董監事責任保險。然而，在實證檢驗從二〇〇八年到二〇一四年之董監事責任保險購買與訴訟後，發現監督假說並未受到支持。而本文之第二部分，乃繼續針對信號假說進行實證檢驗，發現其較能得到支持。再考慮保險購買可能對於保險功能之影響，本文於第三部分分析了購買董監事責任保險後可能之投機行為，結果發現投機行為之證據並不顯著。基於上述發現，本文主張我國並無強制購買董監事責任保險以及限制最高保額之必要。

關鍵詞： 董監事責任保險、公司治理、監督假說、信號假說、Ohlson模型、投機行為、道德危險