D&O Insurance, Excess Director Compensation and Firm Value: Evidence from Taiwan

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Abstract

Our study examines the association between D&O insurance and excess director compensation using a sample of Taiwanese listed firms covering the years 2008 to 2012. Two competing arguments exist concerning the role of D&O insurance. One view suggests that D&O insurance could play a monitoring role to be beneficial to shareholders (O'Sullivan 1997; Holderness 1990). Another view suggests that D&O insurance decreases managers and directors' litigation risk and manager and directors would make self-dealing decisions to hurt shareholders (Core 1997, 2000; Chalmers et al. 2002). Understanding the costs and benefits of D&O insurance, we expect to investigate the net benefit of D&O insurance on excess director compensation.

We examine the association between D&O insurance and director compensation. In addition, we also examine the association between D&O insurance and excess director compensation. The significantly negative relationship provides that the purchase of D&O insurance would decrease excess director compensation.

We also test how firm characteristic variables, governance variables, board activity and director characteristic affects the relation between D&O insurance and excess director compensation. The association is positively related when the directors are experienced. When the firms are in weakly governed, the D&O insurance would lower director compensation. We find that D&O insurance is negatively related to excess director compensation. When the firm is weakly monitored by institutional investors or independent directors, the purchase of D&O insurance would increase excess director compensation.

We examine how D&O insurance affect firm value. The amount of D&O insurance is negatively related to firm value. However, when the value of D&O insurance divided by assets increases, firm value increases.

When the firm is financially constrained, the amount of D&O insurance is negatively related to firm value. When the directors are experienced, the purchase of D&O insurance would increase firm value. When the firm is weakly monitored by institutional investors or independent directors, the purchase of D&O would hurt shareholder wealth.

Keywords: D&O insurance, Excess director compensation, Firm value, Financially constrained, Board activity, Experienced directors

1. Introduction

This study examines the impact of D&O insurance on excess director compensation. D&O insurance contract provides protection to directors and officers against claims arising from their improper decisions on behalf of the firm. If a director or officer has to defend or settle lawsuits resulting from their service for the firm, the D&O insurance would reimburse these indemnification costs once the firm is insolvent, provided that the director or officer had acted honestly and in good faith (Core 1997; Boyer 2005; Chung and Wynn 2008; Lin et al. 2011). In contract, D&O insurance coverage exclusions are the suits based on deliberate fraud or illegal profits (Black, Cheffins and Klausner 2006; Lin et al. 2011). Compared to corporate indemnification, D&O insurance typically provides less restrictive protections for directors and officers and this background offers us an opportunity to investigate how D&O insurance influences corporate decisions (Lin et al. 2011).

Two arguments exist concerning how D&O insurance exerts its impact within the firm. One view is D&O insurance could provide benefits to shareholders while D&O insurer serves as a monitoring mechanism in underwriting procedure (O'Sullivan 1997; Holderness 1990). Holderness (1990) provides that insurer would inspect directors' and top managerial teams' past actions, sometimes requires changes of the board composition or set conditions for directors before deciding whether to issue a contract with the company. When allegation arises from the misconduct of directors or managers, the insurer reimburses directors and officers for the costs of defending and settling lawsuits. D&O insurance could act as a deep pocket payer of last resort for shareholders, so D&O insurance protects shareholder's wealth rather than directors' interests (Romano 1991a; Gutierrez 2003; Boyer 2005). D&O insurance could lower a firms' bankruptcy cost (Core 1997). On the contrary, consistent with managerial opportunism hypothesis, another literature documents that moral hazard arises because managers are more likely to purchase D&O insurance because such contract could protect managers and directors from the threat of opportunistic lawsuits and personal financial liability resulting from their acts, therefore, their behaviors are inclined to expropriate shareholder interests (Core 1997, 2000; Chalmers et al. 2002; Chung and Wynn, 2008).

Recent studies illustrate how D&O insurance affects corporate decisions and outcomes. Chalmers et al. (2002) find entrenched managers purchase D&O insurance before IPO to

compensate for post IPO poor firm performance. Insurers could price this opportunism by charging managers for high insurance premiums. Chung and Wynn (2008) find managerial legal liability coverage is negatively related with earnings conservatism. Lin et al. (2011) show D&O insurance leads managers to make poor mergers and acquisitions decisions, resulting in low synergies outcomes. Acquirers whose managers purchase high levels of D&O insurance coverag e experience lower announce- period stock returns because mangers overpay for the target. Lin et al. (2013) find firms with higher D&O insurance coverage would be asked for higher loan spreads because lenders perceive D&O insurance could increase credit ri sk. Aguir et al. (2012) find director compensation is higher when the firm provides less insurance protection. In addition, protected directors are less likely to negotiate on takeovers and the bid premium is lower once an acquisition happens.

The board of directors performs two functions: monitoring and advising managers (Jenson 1993). An effective director compensation contract can provide directors motivation to monitor the management (Perry 1999). Prior research suggests that equity-based compensation aligns the interests of directors and shareholders (Fich and Shivdasani 2005). However, some other literature argues that equity-based compensation induces director to adopt high risk projects and hurts shareholder interests (Ertugrul and Hegde 2008). Bebchuk and Fried (2003) suggest that directors' behavior is subject to an agency problem and the agency problems in turn take place in their compensation. Therefore, the compensation contracts might contribute to agency conflict (Bebchuk and Fried, 2003). Brick et al. (2006) propose that excess director compensation leads to poor firm performance. Moreover, the positive relationship of CEO and director compensation represent s mutual-favor behavior or cronyism. These results imply that improper director compens ation structure causes agency problems.

Prior studies argue that D&O insurance constitute s a part of corporate risk management (Mayers and Smith 1982; Core 1997; Lin et al. 2013). Understanding that D&O insurance could act as a monitoring device which brings benefit to shareholders (O'Sullivan 1997; Holderness 1990), nevertheless, D&O insurance could induce protected managers and directors to make self-dealing decisions on behalf of the firm, which increases corporate agency costs (Core 1997, 2000; Chalmers 2002; Chung and Wynn, 2008). Therefore, our evidence expects to examine the net benefit effect of

D&O insurance on (excess) director compensation.

To understand whether firm characteristic affects the relationship between D&O insurance and excess director compensation, we select sample according to the financial constraints criteria. When the firm is financially constrained, managers could alter the decisions to give up positive net value projects (Myers and Majluf, 1984). Therefore, we argue that the association between D&O insurance and excess director compensation would be varied under financially constrained firms.

To understand whether corporate governance characteristic affects the relationship between D&O insurance and excess director compensation, we select sample according to different monitoring environment. Managers with empire-building preferences will use all available resources on overinvestment regardless of shareholders' interests (Jensen, 1986). Therefore, we argue that the association between D&O insurance and excess director compensation would be varied under lax monitoring condition.

To understand whether the board activity affects the relationship between D&O insurance and excess director compensation, we examine whether the board meeting activity influences this relationship. Vafeas (1999) claims that firm performance is the main reason for board activity. Brick and Chidambaran (2010) mention board activity is driven by corporate events and board activity has a positive impact on firm value. Therefore, we argue that the association between D&O insurance and excess director compensation would be varied by board activity.

To understand whether director personal characteristic affects the relationship between D&O insurance and excess director compensation, we examine whether director experience matters. From the standpoint of psychology, experience causes individuals make decisions which are different from those from the economic theory (Hertwig and Erev 2009, Hertwig 2012). In this spirit, we argue that the association between D&O insurance and excess director compensation would be varied by experienced directors.

Our study focuses on a sample of Taiwanese firms covering the years 2008 to 2012. Taiwan Stock Exchange requires publicly traded companies to mandatorily reveal relevant information about D&O insurance since 2008. In addition, different from the environment in the U.S. and Canada, Taiwanese firms operate in an environment characterized by poor legal protection. This

situation provides us with an interesting setting to investigate the effects of D&O insurance on director incentives.

We examine the association between D&O insurance and director compensation. In addition, we also examine the association between D&O insurance and excess director compensation. We find that D&O insurance is negatively related to excess director compensation. When the firm is weakly monitored by institutional investors or independent directors, the purchase of D&O insurance would increase excess director compensation.

We also test how financial constraints, governance structure, board activity and director characteristic affects the relation between D&O insurance and excess director compensation. The association is positively related when the firm activity by directors is much more and the directors are experienced. When the firms are lax monitored, the D&O insurance would lower director compensation.

We examine how D&O insurance affect firm value. The amount of D&O insurance is negatively related to firm value. However, when the value of D&O insurance divided by assets increases, firm value increases.

When the firm is financially constrained, the amount of D&O insurance is negatively related to firm value. When the directors are experienced, the purchase of D&O insurance would increase firm value. When the firm is weakly monitored by institutional investors or independent directors, the purchase of D&O would hurt shareholder wealth.

Our study contributes to extent literature by analyzing both corporate risk management and director compensation structure. This helps us recognize how excess director compensation reacts with corporate D&O insurance and how this affects firm value. Besides, we also examine whether firms' financial status, corporate governance structure, board activity and director experience moderate the association between D&O insurance and excess director compensation .

2. Literature Review

Literature Review: D&O insurance

Holderness (1990) suggested the monitoring hypothesis to examine the motivation of purchasing D&O insurance. He finds that D&O insurance has an important governance role as monitoring in

publicly owned companies. On deciding whether to purchase the insurance policy, the insurance company surveys the directors and top managerial team by monitoring their actions and then helps to ensure if the board to work for the interests of the shareholders. By purchasing liability insurance, the insurance company could serve as the third party as an independent external role for the company. That is, when allegation arises because of the wrongdoings from the managerial team or directors, the D&O insurance policy could protect its directors and officers from the liability in the litigation. In addition, D&O insurance helps a firm to recruit external directors to improve the efficiency of monitoring for the shareholders. Holderness (1990) finds that liability protection tends to be carried out by organizations where the ownership structures are much clearer (e.g., NYSE and OTC companies that show typical separation of management from ownership) than organizations where the ownership structure is less clear. The empirical evidence show that the event study identifies that stock prices increases followed by the announcement of liability insurance purchases, which means that the monitoring and litigation services by the insurance company is valued by shareholders.

Following the monitoring hypothesis of Holderness (1990), O'Sullivan (1997) empirically examines the association between firms' monitoring requirements and the purchase of D&O insurance by using a sample of U.K. 366 public companies since 1991. The findings show that smaller firms tend to use internal and external ownership to monitor managers, however, larger firms are more likely to use outside directors and D&O insurance to monitor managers. He also finds both executive ownership and D&O insurance are substitute monitoring mechanisms. These empirical results of the U.S. and the U.K. evidence provide the governance role of D&O insurance (Holderness 1990; O'Sullivan 1997).

Prior literature discusses the sources of firms' demand for D&O insurance. Core (1997) examines that a firm's insurance purchase from the following sources: the demand arising from to make a contract with an outside directors, the demand for corporate coverage (Mayer and Smith 1982, 1990) and the demand resulting from managerial entrenchment. Core (1997) uses data on D&O insurance policies gathered from a sample of 222 Canadian firms to test the determinants of a firm's purchase on D&O insurance related to a firm's characteristics. He finds that firms with

litigation risk and distress probability and utilities sector are more likely to purchase D&O insurance and higher limits, consistent with the hypothesis of Mayer and Smith (1982). However, he rejects the argument that director cash compensation is the substitute for D&O insurance.

The relevant literature begins by Mayer and Smith (1982), who suggest that insurance firms are superior than outside shareholders, bondholders, customers, etc., in monitoring a firms' real activities, so that a firm which purchases insurance will different from that which does not in many aspects. He identifies the motivations about why firms buy insurance contract. The incentives for insurance purchases include: insurance contract could shift risk from firms' other claimholders to the insurance company, lower the transaction costs of bankruptcy, provide claims administration service efficiencies, help firms to monitor and bond managers' actions, guarantee real investment decisions and lower the corporations' tax liability. Thus, firms with higher distress probability are more likely to purchase D&O insurance to lower its costs of bankruptcy. Smaller firms are opt to purchase D&O insurance due to real-service efficiencies. Firms with greater growth opportunities are also opt to buy D&O insurance in order to avoid underinvestment problems (Mayer and Smith 1982, 1990). Core (2000) uses D&O insurance premium gathered from a sample of 110 Canadian firms as the proxy for ex ante litigation risk to test whether D&O insurance premium is associated between the proxies for corporate governance. He provides evidence that D&O insurance premium reflects both business risk and the quality of a firm's corporate go vernance structure. The findings are that D&O higher insurance premium is a reflection for a firm's weaker governance structure, that is, D&O insurance premium is asked higher when inside ownership of directors is lower, when fewer outside directors are in the board, when the CEO has appointed as more outside directors and when inside voting control right of directors is greater. Also, D&O insurance premium are positively related to excess CEO compensation which implies that the firms could make shareholders even worse. Both of O'sullivan's (1997) result in the United Kingdom and Core 's (1997,2000) result in Canada conclude that D&O insurance coverage is substitute for managerial ownership as corporate governance instrument (Boyer, 2005) and D&O insurance acts as a monitoring device (O'sullivan 1997, Holderness 1990, Core 2000).

If D&O insurance could act as a corporate governance instrument o r a monitoring device to

lower the cost of bankruptcy, the stock returns of such firm should be positively related to their D&O insurance purchase. However, empirical results seem not support this argument. Three studies examine the impact of D&O insurance on shareholder welfare: Bhagat, Brickley, Coles (1987) suggest D&O insurance aligns the interests of managers and shareholders by analyzing stock returns of a list of New York Stock Exchange firms around purchasing D&O insurance and management-sponsored proposals to broaden indemnification provisions. The results show that no significant effect of D&O insurance on shareholder wealth and the broadening indemnification provisions also show insignificant effect to cause negative returns on shareholders. Janjigian and Bolster (1990) examine the stockholder returns around the Delaware firms which permit the decision to eliminate director liability. Their results provide that Delaware firms perform worse than non-Delaware firms during the legislative period; however, no significant differences exist between these two groups, which reveal that director liability elimination does not affect shareholder value. Brook and Rao (1994) also find the insignificant stock returns on the adoption of liability limitation provisions, but the positive stock reactions only react on financially troubled firms with director liability provisions, which provide that liability limitations provisions are valuable for financially distressed firms.

Another literature offers further insight into the discussion on corporate decision on D&O insurance purchase. Chalmers, Dann and Harford (2002) use a sample of 72 initial public offering firms during the period 1992 through 1996 to test the managerial opportunism hypothesis. After controlling other variables determining the D&O insurance coverage, they find the amount of D&O insurance coverage at the IPO is negatively associated to three-year stock price firm performance. Because insurers could be able to distinguish overpriced equity, Chalmers et al. (2002) interpret that managers of IPO firms have superior private information in the insurance decision to pay high insurance premiums in advance to prepare for future poor performance. These results are consistent with the interpretation of Core (1997, 2000) that entrenched managers are likely to buy more insurance. Boyer (2005) thinks the reasons of D&O insurance purchase from the viewpoint that D&O insurance could protect shareholders. He argues that shareholders should value D&O insurance protection most because it is the way from which shareholders could claim part of their

loss when the board becomes liable from their error actions. Therefore, He finds the evidence that D&O insurance supports the shareholder protection hypothesis in all model specification that shareholder's wealth and the reliance on debt are positively to the demand for D&O insurance, therefore, he concludes that D&O insurance is an instrument to protect shareholder's wealth in case of managerial incompetence (Boyer 2005).

Another paper of Boyer (2012) expects to investigate how D&O insurance premium varies with different organization ownership structure, common equity and income trust companies. Because insurer holds more private information and powerful incentives, D&O insurance contract could signal some litigation and governance risk information of the firm. Thus, consistent with governance risk hypothesis, Boyer (2012) finds that income trust companies pay higher D&O insurance premiums than common equity common firms because insurance contract reveals that the governance risk of income trust firms at the IPO is greater than common equity f irms.

Prior studies suggest that the D&O insurance purchase decision due to the opportunism behavior of managers (Core 1997; 2000, Chalmers et al. 2002). Chung and Wynn (2008) test the effect of D&O insurance and indemnification on manager's reporting beha vior. Chung and Wynn (2008) use the sum of D&O insurance coverage and cash for indemnification of a sample of Canadian firms on behalf of managerial legal liability coverage, and they find managerial legal liability coverage is negatively related the firm's earning conservation. The firm with high managerial legal liability coverage could lower the expected liability of managers and thus tends to recognize bad news in earnings on time. Additionally, the association is more pronounced in Canadian firms cross-listed in the U.S. compared to the other firms listed local only.

Lin, Officer and Zou (2011) are the first to examine the impact of D&O insurance on the outcomes for acquirers in mergers and acquisitions (M&A) by analyzing listed firms in Canada. Their findings provide that firms carrying high level of D&O insurance receive poor synergies, resulting in lower abnormal stock returns around M&A announcement period than those without protected by D&O insurance. The results agree with the document that D&O in surance induces moral hazard of directors and officers by protecting them from the discipline of shareholder litigation.

Lin, Officer Wang and Zou (2013) examine the effect of D&O insurance coverage on a firm's cost of debt by using a sample of firms of Toronto Stock Exchange 300 index during 1996-2008. They find that higher level of D&O insurance coverage is associated with higher loan spread. They interpret this result by investigating that the firms with higher D&O insurance coverage increase corporate total risk and lower financial reporting quality. Lenders perceive the adverse effects of moral hazard and information asymmetry caused by D&O insurance coverage might be harmful and then charge higher loan spread for loans to penalize the firm.

Zou, Wong, Shum, Xiong and Yan (2008) examine the motivations of Chinese listed firms to purchase D&O insurance. Different from the disperse ownership structure in the U.S. and the U.K., China's list firms are often controlled by a large shareholder and agency problem arises when controlling shareholder expropriate the interests minority shareholders. Under the agency problem in China, they find that firms with more controlling-minority shareholder conflict are more likely to purchase D&O insurance because D&O insurance could protect directors and managers from expropriation-related litigation risk.

By examine the effect of liability protection on the compensation and incentives of directors, Aguir, Burns, Mansi and Wald (2012) hypothesize that directors should receive greater compensation if their firms adopt a lower level of liability protection. Using the available information which provides the firm has a director protection provision and the firm has director compensation data, the dataset covers 5358 firm-year observations from 1992 to 2006. The results show that directors protected by liability provisions receive approximately 12% to 15% lower compensation than other directors of firms without liability protection. Moreover, they argue that directors without protection could make greater efforts to negotiate takeovers and get higher premium in accepted takeovers. The evidence provides that directors with liability protection are less likely to have the acquisition succeed and they on average receive about 8% to 16% lower premium than those without protection. These findings show that liability protection has different effects on both director compensation and takeover outcomes and protected directors might value their own interests above those of the shareholders.

Literature review: Director Compensation

Board of directors is considered an important mechanism for limiting self-serving behaviors in firms where managers and owners have conflicting roles (Fama and Jensen, 1983). Directors are considered to protect the interests of shareholders and review management's decisions (Eisenhardt, 1989) and to actively monitoring the performance (Boyd, 1994). An effective board can therefore protect the interests of shareholders by ensuring well-functioned management (Eisenhardt, 1989). From the director reputation perspective, the personal reputation are established by director's decision-making history and perceived by the directorship labor market (Fama, 1980; Fama and Jensen, 1983, Yermack, 2004). The board of directors has duties to oversee management and monitor decision-making for enhancing the interests of shareholders (Fama and Jensen, 1983). They are rewarded by the director labor market for effective monitoring and punished for ineffective monitoring (Srinivasan, 2005). Thus, the duties of directors are a function of their incentives.

When directors are compensated with annual retainers and fees for workload and board meetings, their pay is tied to shareholders' interests (Linck, Netter, and Yang, 2009). By increasing the pay-performance sensitivity, compensation provides strong incentives to directors to monitor management. When directors of boards receive stocks and stock options, Perry (1999) finds an increase in the likelihood of CEO turnover following poor performance, indicating that compensation increases the monitoring incentives of directors. Ryan and Wiggins (2004) note that managers use their power to reduce directors' compensation to provide fewer incentives for monitoring management. Fich and Shivdasani (2005) indicate that firms with director stock option compensation have higher market value and accounting performance.

Previous researches provide even contradictory results that have led some to question whether director is an effective mechanism in corporate governance. Deutsch (2007) indicate that the director incentives may cause board members incapable of providing effective monitoring. Deutsch et al. (2011) also suggest that both CEOs and directors are seen to act as interrelated and self-motivated agents.

Bebchuk and Fried (2003) indicate that there is no reason to expect that directors will help reduce the agency problems because managers have no reason to automatically seek to maximize shareholder value. Therefore, directors can be viewed as self-serving agents who have to be

provided with incentives to align their interests with those of the shareholders (Yermack, 2004; Brick, Palmon, and Wald, 2006). Bebchuk and Fried (2003) suggest that directors' behavior is subject to an agency problem, which in turn addresses agency problems in their compensation.

Agency theory assumes that agents are self-serving individuals who are effort- and risk-averse (Jensen and Meckling, 1976). Besides the executives, board of directors and their compensation arrangements would also be faced with agency conflict. The existence of boards of directors does not guarantee a solution to the primary agency problems among board members, shareholders and managers. In contrast, it could create other criteria of agency conflicts. An acceptable compensation contract involves an optimal payoff function that induces the desired level of effort and provides efficient risk sharing. Balancing the risk and incentives for director compensation practices can ameliorate conflicts of interests and produce the best possible performance (Linn and Park, 2005). However, Deutsch (2007) indicate that the director incentives may cause board members incapable of providing effective monitoring.

The directors are to monitor the management to reduce the conflict between shareholders and executives. However, the mutual favor and interlock between directors and executives cause the disciplining role more fragile (Hallock, 1997; Bebchuk and Fried, 2003). Hunton and Rose (2008) also indicate that directors might pursue self-interests when making accounting choices. Therefore, directors might even ingratiate themselves with executives to have risk bearing incentives. Bebchuk and Fried (2003) suggest that directors' behavior is subject to an agency problem, which in turn addresses agency problems in their compensation. Therefore, the compensation contracts for directors which aim to resolve agency problems could contribute to agency conflict. (Bebchuk and Fried, 2003).

Director incentive mechanisms are potentially subject to major conflicts of interest (Yermack, 2004), making past empirical inference less straightforward. Prior research uses different compensation incentives, including excessive compensation, to explore the effect of director compensation on risk taking. Brick, Palmon, and Wald (2006) indicate that the positive relation between CEO and director compensations reflects cronyism between managers and directors, suggesting that they are mutual-favor and put their own interests ahead of the interests of

shareholders.

Directors' exposure to lawsuits is substantially limited by insurance available to directors (Brook and Rao 1994; Core 1997). Bradley and Chen (2011) suggest that limited liabilities and indemnification provisions encourage directors to may engage in more risk-taking behaviors, which would be beneficial particularly for firms with more growth opportunities. Therefore, the protection from shareholder suits as afforded by limited liability and indemnification provisions have a strong effect on directors' incentives to pursue their own interests.

3. Theory Ground and Hypothesis development

Brook and Roa (1994) emphasize on firm-specific character on the effect of carrying out limited liability protection (LLP). Given the high level of litigation risk of financial distressed firms, they provide that the adoption of LLP are more valuable for those firms because their costs associated with outside directors are expected to be lower. Therefore, they argue that shareholders regard the adoption of LLP as a trade off between the loss of shareholders' right and the expansion on director protection. Nevertheless, previous evidence of Bhagat et al. (1987) finds purchasing D&O insurance decision does not harm shareholder value although it may have positive impact. Netter and Poulsen (1989) intend to find the shareholder wealth effect on managerial adoption of charter provisions to decrease risk from personal liability and little evidence show that shareholder harm from limits on liability.

Prior literature takes different viewpoints on the role of director insurance. On the one side, D&O insurance can be beneficial to shareholders because it can improve corporate governance quality by monitoring in underwriting process (Holderness 1990; O'Sullivan 1997; Core 2000). And D&O insurer has comparative advantage to provide settlement services (Mayers and Smith 1982). Core (2000) provides that D&O premiums is the reflection of firms' corporate governance structure and the D&O premium is positively related to excess CEO compensation, which implies a kind of poor corporate governance quality. On the other side, Chalmers, Dann and Harford (2002) argue that the adoption of director liability protection provisions enables entrenched managers to make self-serving decisions by testing a sample of IPO firms. They find managers purchase D&O

insurance for opportunism when they perceive the IPO price is too high. And the insurer asks higher premiums to compensate for the possibility from poor post-IPO performance.

Recent research focuses on whether and how D&O insurance affect corporate decisions. Bradley and Chen (2011) claim that directors are likely to adopt low-risk projects, provided with limited liability and indemnification which insult them from litigation risk. Thus, D&O insurance helps firms to achieve higher credit rating and lower yield spreads so as to benefit bondholders. Lin et al. (2013) provide evidence that higher D&O insurance coverage is associated with higher loan spreads as lenders perceive D&O insurance would increase credit risk.

Aguir et al. (2012) examine the effect of liability protection on directors' compensation and find that directors receive higher pay if they are less protected by liability protection. This result implies that director compensation and protection provisions can be substitute for each other. They suggest that the protection itself is not the necessary for the optimal policy, however, to some extent that some firms may take advantage of the reduced cost caused by protection provisions while other firms may benefit from the exposed directors who provide more responsibility for the work on behalf of the firm.

Directors on the board have to monitor the firm's managers to resolve the agency conflicts resulting from the separation of ownership and control (Fama and Jensen, 1983). Directors are concerned with many important corporate decisions such as mergers and acquisition, capital expenditures etc. Therefore, whether the director' behaviors are concentrated on the interests of shareholders is quite a critical issue (Johnson et al., 1996). Besides, directors can act as an internal governance mechanism to monitor executives and make strategic decisions on behalf of the firm (Gillan 2006).

Ryan and Wiggins (2004) empirically find that CEO and director compensation are mutually influenced. Directors on boards with entrenched managers and with more insiders receive less equity-based compensation. Brick et al. (2006) find a positive relationship between CEO and director compensation and both excess compensation of CEO and director lead to firm underperformance when the mutual-favor behavior or cronyism occurs. Yermack (2004) states that provided with the incentives of reputation and compensation, directors tend to behave for the

interests of shareholders. Ryan and Wiggins (2004) state more independent directors on boards could make director compensation package which are more sensitive to stock market performance. Becher et al. (2006) find that banks implement more equity compensation for directors after deregulation. However, Gerety et al. (2001) find that insignificant firm's stock reaction around the announcement of incentive plans for directors, suggesting that shareholders do not benefit from director incentive compensation. Brick et al. (2006) argue that due to unobserved firm complexity, excess director compensation and excess executive compensation are highly related after controlling for CEO, firm and governance characteristics. They also find both excess director and CEO compensation lead to poor stock performance. They claim that excess director compensation as an environment of cronyism which exploits shareholders' interests. Brick et al. (2006) and Berry et al. (2006) document that executive compensation can be treated as a governance mechanism. Minnick and Zhao (2009) find that directors' option compensation induce firms' backdating employee stock options to increase director' personal wealth instead of shareholders' welfare.

Based on the above literature, director incentives or excess pay could result in agency problems. When the misconduct of directors on behalf of firm destroys firm value, the board might be sued by shareholders or stakeholders. Therefore, Peng and Roell (2008) find that option-based pay let executives focus on short-term profit, therefore, increases the likelihood of securities class action litigation. Crutchley and Minnick (2012) examine how director compensation affects their ability to effectively act in the interests of shareholders using a sample of lawsuits file. They find that directors with excess compensation are more likely to face a director-aimed lawsuit, however, directors with high cash compensation are less likely to be sued by shareholders. The result suggests that excess pay of directors reveals that directors are more concerned short-term profit to increase their own wealth at the expense of shareholder value, thus causing sever agency problem.

The study tries to link director compensation and corporate risk management via the adoption of D&O insurance, to find out how D&O insurance affects (excess) director compensation. We want to investigate how the role of firms' risk management mechanism is connected with (excess) director compensation and the tradeoff effect between D&O insurance and (excess) director incentives. On the one hand, we propose that D&O insurance decreases the disciplining potential of

litigation which cause directors neglect of their duty on shareholders and worsen firms' corporate governance structure. Therefore, we hypothesize that after controlling for firm and other governance variables, the adoption of D&O insurance would be positively related (excess) director compensation. On the other hand, D&O insurance acts as a monitoring device to firms' directors and managerial team (Holderness 1990, O'Sullivan 1997) and this contribution would improve corporate governance structure. In this spirit, we hypothesize that after controlling for firm and other governance variables, the adoption of D&O insurance would be negatively related (excess) director compensation. Following Brick et al. (2006), the mutual back behavior between CEO and directors would reflect in their compensation structure. Under this circumstance, we expect to investigate how the risk management mechanism interacts with the kind of compensation structure. We examine the effect of D&O insurance on excess director (CEO) compensation due to cronyism.

Hypothesis 1. D&O insurance would be positively related to (excess) director compensation if the net benefit of adoption D&O insurance worsens firms' governance structure.

Hypothesis 2. D&O insurance would be negatively related to (excess) director compensation if the net benefit of adoption D&O insurance improves firms' governance structure.

Does Firm Characteristic Matter?

Mayers and Smith (1982, 1990) observe that it is more possible for distressed firms to purchase D&O insurance within which lowers the costs of bankruptcy. Brook and Roa (1994) propose that the market reaction to the adoption of LLP depends on firm-specific characteristic, that is, the net benefit of LLP is larger for financially troubled firms. We therefore hypothesize that the relationship between D&O insurance and (excess) director compensation would be varied in the financially troubled firms.

Does Corporate Governance Matter?

Adams, Lin and Zou (2011) suggest that both monitoring mechanism and managerial incentives affect corporate insurance purchase decision. Previous literature mentions firms with entrenched managers are more likely to purchase D&O insurance (Core 1997). Core (2000) finds that the D&O

premiums reveal firms' governance quality provided that the premium is positively corrected with weak governance implied by excess CEO compensation. We argue that the net benefit of D&O insurance is not the same in different degrees of governance structure. Therefore, we hypothesize that the relationship between D&O insurance and (excess) director compensation would be varied in firms under different monitoring mechanism.

Does Board Activity Characteristic Matter?

The study expects to add the line of research by considering the intensity of board meeting. Prior studies have mixed results on the association between board meeting and firm value. Some report that board meeting are beneficial to shareholders (Lipton and Lorsch 1992; Conger 1998). Vafeas (1999) finds that higher board meeting frequency results in negative stock returns, in line with the statement that board meetings are reactive to poor performance rather than proactive (Jensen 1993). Therefore, we hypothesize that the relationship between D&O insurance and (excess) director compensation would be varied in firms under different board meeting frequency.

Does Director's Personal Characteristic Matter?

Recent researches find that personal experience would influence corporate financial decision making (Malmendier and Tate 2005). In addition, personal experience could impact individual's investment decisions and the financial prediction (Greenwood and Nagel 2009; Malmendier and Nagel 2011). From the viewpoint of psychology, individual makes her decisions according to past experiences rather than based on her expected utility function (Hertwig and Erev 2009; Hertwig 2012). Dittmar and Duchin (2013) provide that CEOs whose have been employe d in financially difficult firms tend to save more cash, hold less short-term debt and have lower net debt ratios. For this purpose, we expect to investigate whether directors' past experiences affect their actions on the firms. Therefore, we hypothesize that the relationship between D&O insurance and (excess) director compensation would be varied by experienced directors who are employed at other firms.

4. Research Design and Methodology

This study identifies the association between D&O insurance and (excess) director compens ation. Our sample includes all non-financial listed firms in Taiwan covering the years from 2008 to 2012. Our data are comprised of three parts: D&O insurance data, corporate governance data and company information data. We collect our data directly from the *Taiwan Economic Journal* (TEJ) database. We begin with 2008 because corporate D&O insurance information from TEJ disclose from 2008.

Data: D&O insurance information

We select firms' D&O insurance amount from TEJ. Because some firms carry out D&O insura nce with more than two insurers (coinsurance) in the same year, we merge the data and estimate total insurance amount each year. We use natural log of insurance amount as our dependent variable (*Ln Insur*), besides, *Insur_D* dummy variable is equal to 1 if the firm adopts D&O insurance; otherwise, 0.

Data: Excess director compensation

The director and CEO compensation information we use is as following:

Dir_c: average director cash compensation

Dir_t: Average director cash compensation plus cash dividends plu s employee stock warrants

To estimate excess director compensation, we follow Brick et al. (2006) to estimate the predicted value of director cash and total compensation. We then run regressions in which the dependent variables are cash and total compensation of directors. The independent variables include firm, governance, director and CEO characteristics (Core et al. 1999; Palia 2001) and year dummies. Excess director compensation is the difference between the predicted estimation of director cash and total compensation and the actual director cash and total compensation.

Fit Dir_t = f (Firm Characteristic Variables, Corporate Governance Variables, director and CEO characteristics, Year Dummies)

Excess Dir_t= Dir_t- Fit Dir_t……(1)

Financially troubled firms measurement

We select the following approaches associated with firm-level financial status as proxies for financial constraints.

a Firm size (*Size_dum*): Almeida et al. (2004) state that small firms have difficulties in raising capital within the market, because they are less well known. We classify financially constrained firms if their book value of total assets is below the median level in the year.

b. Dividend dummy (Pay_dum): Compared to constrained firms, unconstrained firms are more likely to have higher payout ratios (Almeida et al., 2004). We classify financially constrained firms if they did not pay cash dividends in the year.

c. Cash flow (*Cf_dum*): Firms with larger internal cash flows may find it easier to obtain external financing, since such firms are invariably perceived by lenders as being less risky (Leland and Pyle, 1977). We classify financially constrained firms if their cash flow normalized by the start-of-year book assets is below the sample median level (Babenko et al., 2010) in the year.

Almeida et al. (2004) state that small firms have difficulties in raising capital within the market, because they are less well known. We classify financially constrained firms if their book value of total assets is below the median level in the year.

Corporate governance measurement

We apply two approaches as proxies for corporate governance. Independent directors have expertise in management and decision making and are less subject to agency conflicts (Fama and Jensen, 1983). We measure the number of independent board seats divided by the total number of board seats as the proxy of governance *(Indp_dum)*. We follow prior studies to use the ownership of institutional investors as an additional measure of the quality of corporate governance (Inst_dum)(see e.g. Dittmar and Mahrt-Smith, 2007).

Board activity measurement

To represent the board activity, the proxy we use is the rate of directors attend the meetings by herself. *MR_dum* is a dummy variable which is equals to 1 when the value of (the board members to attend the meeting by herself rather than by representatives/all members) is above the medium value.

Director experience measurement

The data disclosed in TEJ is that whether directors have professional experiences in finance, accounting or law. We measure director experience *(EX_dum)* as dummy variable is equal to1 if he has experience in any one of the above items; otherwise, 0. Therefore, one director's past experience ranges from 0 to 3. We merge the data of directors and estimate average director's experiences of a firm each year to proxy for the experience variable.

Models

The first hypothesis is to examine the association of D&O insurance and excess director compensation. First, We regress on D&O insurance on director compensation for the whole sample Second, we examine we regress on D&O insurance on excess director compensation for the sample whose excess cash is greater than 0. We would expect a negative relationship between D&O insurance and (excess) director compensation. The regression models can be specified as following.

Dir_c = f (D&O insurance variables, Controls)……(1)

Dir_t = f (D&O insurance variables, Controls)…… (2)

Excess Dir_c = f (D&O insurance variables, Controls)……(3)

Excess Dir_t = f (D&O insurance variables, Controls)……(4)

we would like to find how firm characteristic (FC), governance characteristic (CG), board activity (BA) and director experience (DE) affect the association between D&O insurance and (excess) director compensation. We expect to explore if these specifications as moderator variables would strengthen or weaken the relationship. The regression models can be specified as following.

ExcessDir = f (D&O insurance variables, FC, D&O insurance variables X FC, Controls)……(5)

ExcessDir = f (D&O insurance variables, CG, D&O insurance variables X CG, Controls)……(6)

ExcessDir = f (D&O insurance variables, BA, D&O insurance variables X BA, Controls)……(7)

ExcessDir = f (D&O insurance variables, DE, D&O insurance variables X DE,

Controls)……(8)

Where, ExcessDir is excess director (total) compensation. FC is the proxy to represent financially constrained firms. CG is the proxy to represent firms with weak governance structure. BA is the proxy to represent the board activity. DE is the proxy to represent directo r experience.

In addition, we examine how D&O insurance is associated with shareholder value. We apply the model of Fama and French (1998) to measure the stock performance of excess cash holdings (Pincowitz, Stulz, and Willionson, 2006; Dittmar and Ma hr-Smith 2007). The dependent variable is market-to-book value of the firm at time t ($MV_{i,t}$). Our main variable is D&O insurance. The regression model includes control variables that are likely to affect investors' expectations of future net cash flows. Following Fama and French (1998), the control variables include the past and future changes and current levels of earnings (E), research expenses divided by net assets (RD), dividends (D), interest expenses (R), as well as past and future changes in net asse ts (dNA) and future changes in market value (dMV). We normalize all control variables by the book value of total assets net of cash. Moreover, we include year and industry dummies to control for the differences in firm value that stem from economics and he terogeneity industry effects. The regression equations are as follows:

$$\begin{aligned} MV_{i,t} &= a + b_1 XCash_{i,t} + b_2 FC_{i,t-1} + b_3 XCash_{i,t-1} FC_{i,t-1} + b_4 E_{i,t} + b_5 dE_{i,t} + b_6 dE_{i,t+2} \\ &+ b_7 RD_{i,t} + b_8 dRD_{i,t} + b_9 dRD_{i,t+2} + b_{10} D_{i,t} + b_{11} dD_{i,t} + b_{12} dD_{i,t+2} \\ &+ b_{13} R_{i,t} + b_{14} dR_{i,t} + b_{15} dR_{i,t+2} + b_{16} dNA_{i,t} + b_{17} dNA_{i,t+2} + b_{18} dMV_{i,t+2} \\ &+ YearFixedEffects + IndustryFixedEffects + \varepsilon_{i,t} \end{aligned} \quad (9)$$

Here, $dX_{i,t}$ indicates the change in the variable X of firm i from year t-1 to t, $dX_{i,t+1}$ indicates the change in the variable X of firm i from year t to t+1, $MV_{i,t}$ indicates market value of equity at time t computed as price times shares plus total liabilities, $NA_{i,t}$: net assets at time t

$E_{i,t}$ is earnings before interest and tax at time t, $RD_{i,}$ is research and development expenses at time t, $D_{i,t}$ is common dividends at time t, $R_{i,t}$ is interest expenses at time t.

To test how firm characteristic (FC), governance characteristic (CG), board activity (BA) and director experience (DE) affect the valuation between D&O insurance and market firm

valuation. We expect to explore if these specifications as moderator variables would strengthen or weaken the relationship. The regression models can be specified as following.

Firm performance = f (D&O insurance variables, FC, D&O insurance variables X FC, Controls)……(10)

Firm performance = f (D&O insurance variables, CG, D&O insurance variables X CG, Controls)……(11)

Firm performance = f (D&O insurance variables, BA, D&O insurance variables X BA, Controls)……(12)

Firm performance = f (D&O insurance variables, DE, D&O insurance variables X DE, Controls)……(13)

5. Empirical results

Table 1 provides descriptive statistics. The table shows summary statistics of the variables used to predict our hypothesis and empirical examination specified in the prior section. Table 2 provides the variable definitions in the paper.

Table 3 shows the OLS results on the effect of D&O insurance on director compensation. The dependent variable on column (1) to (4) is director cash compensation and the dependent variable on column (5) to (8) is director total compensation. Only two results are significant which shows that D&O insurance is positively related to director cash compensation. Another results show that D&O insurance is negatively related to director total compensation.

Table 4 shows the OLS results on how firm characteristic variables, governance variables, board activity and director characteristic affects the relation between D&O insurance and director compensation. Panel A,B and C show the results of the financial constraints variables on the relationship between D&O insurance on director compensation. The D&O insurance on small firms is significantly related to director compensation and two results show that directors' cash (total) compensation will increase if smaller firms adopt D&O insurance. When the firms which cash flow is below the medium level and the firms will not pay dividends, the relation between D&O insurance and director total compensation is mixed. Panel D shows that if directors attend the meeting by herself and the phenomenon is above a certain level, firms with D&O insurance would

increase director cash (total) compensation. Panel E shows the results that if directors have more experience in the professional area, the adoption of D&O insurance will increase director total compensation. Panel F and Panel G show how governance variables moderate between the relation of D&O insurance and director compensation. Panel F shows that if the firm is less monitored by institutional investors, the adoption of D&O insurance will decrease director compensation. Panel G shows that if firms where the ratio of independent directors is below the medium level, the adoption of D&O insurance will decrease director cash and total compensation.

Table 5 shows the results of the relationship between D&O insurance and excess director compensation. The significantly negative relationship provides that the purchase of D&O insurance would decrease excess director compensation.

Table 6 shows the OLS results on how firm characteristic variables, governance variables, board activity and director characteristic affects the relation between D&O insurance and excess director compensation. Panel A,B and C show the results of the financial constraints variables on the relationship between D&O insurance on excess director compensation. The results on small firms and low cash flow firms are mixed. However, when the firm does not pay dividends, the purchase of D&O insurance would result in lower excess director compensation. Panel D shows that the board activity does not significantly affect the relationship between D&O insurance on excess director compensation. Panel E shows that experienced directors could affect the effect of D&O insurance on excess director compensation. If the amount of D&O insurance is larger, excess director compensation increases. However, when the value of D&O insurance divided by assets increases, excess director compensation decreases. Panel F shows when the firm is weakly monitored by institutional investors, the purchase of D&O insurance would increase excess director compensation. Panel G shows that if firms where the ratio of independent directors is below the medium level, the adoption of D&O insurance will increase excess director compensation.

Table 7 shows the impact of D&O insurance using market-to-book regressions. Column (1) and (2) shows if D&O insurance affect shareholder value by the whole sample. Column (3) and (4) shows if D&O insurance affect shareholder value by the sample whose director excess compensation is greater than 0. We find the result is consistent no matter in the whole sample or in

the subsample. The amount of D&O insurance is negatively related to firm value. However, when the value of D&O insurance divided by assets increases, firm value increases.

Table 8 shows the results of the financial constraints variables on the relationship between D&O insurance on firm value. The results show that more constrained firms, that is, the small, less cash flow and no dividend-paying firms, the amount of D&O insurance is negatively related to firm value. However, when the value of D&O insurance divided by assets increases, firm value increases. Panel A of Table 9 shows that the board activity does not significantly affect the relationship between D&O insurance and firm value. Panel B show that if the directors are experienced, the purchase of D&O insurance would increase firm value. And the results also exist in the excess director compensation companies.

Panel A of Table 10 shows when the firm is weakly monitored by institutional investors, the purchase of D&O would decrease firm value in excess director compensation firms. Panel B shows that if firms where the ratio of independent directors is below the medium level, the purchase of D&O would decrease firm value in all firms and excess director compensation firms.

6. Conclusion

Our study examines the association between D&O insurance and excess director compensation using a sample of Taiwanese listed firms covering the years 2008 to 2012. Two co mpeting arguments exist concerning the role of D&O insurance. D&O insurance could play a monitoring role to be beneficial to shareholders (O'Sullivan 1997; Holderness 1990). D&O insurance decreases managers and directors' litigation risk and manager and di rectors would make self-dealing decisions to hurt shareholders (Core 1997, 2000; Chalmers et al. 2002).

We examine the association between D&O insurance and director compensation. In addition, we also examine the association between D&O insurance and excess director compensation. The significantly negative relationship provides that the purchase of D&O insurance would decrease excess director compensation.

We also test how firm characteristic variables, governance variables, board activity and director characteristic affects the relation between D&O insurance and excess director compensation. The association is positively related when the firm activity by directors is much

more and the directors are experienced. When the firms is in weak governance structure, the D&O insurance would lower director compensation.

We find that D&O insurance is negatively related to excess director compensation. When the firm is weakly monitored by institutional investors or independent directors, the purchase of D&O insurance would increase excess director compensation.

We examine how D&O insurance affect firm value. The amount of D&O insurance is negatively related to firm value. However, when the value of D&O insurance divided by assets increases, firm value increases.

When the firm is financially constrained, the amount of D&O insurance is negatively related to firm value. When the directors are experienced, the purchase of D&O insurance would increase firm value. When the firm is weakly monitored by institutional investors or independent directors, the purchase of D&O would hurt shareholder wealth.

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Table 1

Descriptive Statistics

	Mean	Std. dev.	Q1	Median	Q3	Minimum	Maximum
Bsize	7.270	2.104	6	7.000	8	4	17
Bcollect	0.0829	0.176	0.000	0.000	0.066	0	0.999
Bown	0.207	0.136	0.110	0.166	0.266	0.037	0.878
Indp	0.159	0.160	0.000	0.167	0.285	0	0.5
Bcontrol	0.605	0.209	0.428	0.571	0.750	0.143	1.000
Instown	0.356	0.217	0.177	0.323	0.511	0.010	0.999
Dual (0/1)	0.900	0.298	1	1.000	1	0	1
Score	3.523	1.098	3	3.000	5	1	7
Dirc	736.667	1031.872	120	377.000	907	0	7882
Dirt	2004.607	1787.809	888.857	1453.400	2541.143	0	15512
Lndirc	5.787	1.494	4.905	6.001	6.838	0	8.972
Lndirt	7.266	0.873	6.790	7.281	7.841	1.815	9.649
Meet_rate	0.796	0.123	0.715	0.814	0.891	0.428	1.000
Expnumv	0.283	0.265	0.000	0.353	0.488	0	0.957
Insurv	136848.808	220346.826	0	60000.0	164825	0	1727460
Lninsurv	11.976	1.129	11.400	11.982	12.600	4.521	14.362
Insurv_a	0.036	0.072	0.000	0.006	0.043	0	0.857
Insur_d (0/1)	0.553	0.497	0	1.000	1	0	1.000
Fix_a	0.432	0.333	0.189	0.351	0.608	0.000	3.306
Size	15.296	1.255	14.000	15.159	16.000	12.283	19.618
Debt_a	0.402	0.169	0.273	0.405	0.525	0.016	0.986
ROA	0.093	0.094	0.048	0.092	0.142	-1.053	0.600
Capex_a	0.048	0.056	0.010	0.029	0.065	0.000	0.698
Mv_a	1.386	0.802	0.917	1.155	1.580	0.329	7.966

Var	7.976	4.093	4.960	7.316	10.300	1.077	28.735

Table 2 Variable definitions

	Variables	Definitions
Insurance liability variables	Insurv	The insurance amount of director liability ($ thousands)
	Lninsurv	Nature logarithm of Insurv
	Insurv_a	Total insurance amount of director liability / Total Assets
Director compensation	Dir c	Average director cash compensation ($thousands)
	Dir t	Average director cash compensation plus cash dividends plus employee stock warrants ($thousands)
	Lndirc	Nature logarithm of Dir c
	Lndirt	Nature logarithm of Dir t
Control Variables	Size	Logarithm of total asset
	ROA	Earnings before interest, tax, depreciation / total assets
	Debt_a	Total liability divided by total assets
	Fix1_a	Property, Plant and Equipment / total assets
	Capex_a	Capital expenditure / total assets
	Mv_a	The market value of equity plus the book value of debt / total assets
	Var	The mean of the variance in stock return for firms over a fiscal year
	Mv/a	The ratio of the market value of equity (csho*prcc_f) to the book value of assets (ceq).
Corporate governance variables	Board_size	The numbers of directors on the board
	Board_own	The sum of equity owned by directors / common shares outstanding
	Indp	Ratio of independent directors to total directors

	Bcontrol	The number of affiliated directors divided by the total number of directors.
	Instown	Ratio of the shares owned by institutions / total number of shares outstanding
	Dual (0/1)	A dummy variable equals one if the managers are also directors on the board
	Score(0/1)	A dummy variable equals one if the discosure status is above “A”, otherwise zero.

Table 3 Directors' and Officers' Insurance and director cash (total) compensation

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(insurv)	-0.004		**0.031****		-0.015**		-0.010	
	(0.751)		**(0.022)**		(0.022)		(0.130)	
Ln(insur/a)		-0.004		**0.031****		-0.015**		-0.010
		(0.753)		**(0.022)**		(0.0220)		(0.130)
Size	0.500***	0.496***	0.476***	0.476***	0.328***	0.313***	0.344	0.344
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Mv/a	0.129***	0.128***	0.163***	0.163***	0.090***	0.090***	0.148	0.148
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	6.407***	6.407***	6.460***	6.460***	3.062***	3.062***	2.826	2.826
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fix/a	-0.536***	-0.535***	-0.437***	-0.437***	-0.430***	-0.430***	-0.314	-0.314
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Var	-0.035***	-0.035***	-0.038***	-0.038***	-0.021***	-0.021***	-0.029	-0.029
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Debt/a	-0.171*	-0.170*	-0.483***	-0.483***	-0.007	-0.007	-0.021	-0.021
	(0.059)	(0.059)	(0.000)	(0.000)	(0.867)	(0.867)	(0.679)	(0.679)
Capex/a	1.133***	1.133***	1.140***	1.140***	0.976***	0.976***	1.120	1.120
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Instown	0.315***	0315***	0.214**	0.214**	-0.112***	-0.112***	-0.135	-0.135
	(0.000)	(0.000)	(0.013)	(0.013)	(0.010)	(0.010)	(0.002)	(0.002)
Indp	-0.122	-0.122	0.207**	0.207**	-0.447***	-0.447***	-0.435	-0.435
	(0.158)	(0.158)	(0.023)	(0.023)	(0.000)	(0.000)	(0.000)	(0.000)
Dual (0/1)	-0.141***	-0.141***	-0.069	-0.069	0.505***	0.505***	0.493	0.493
	(0.000)	(0.000)	(0.103)	(0.103)	(0.000)	(0.000)	(0.000)	(0.000)
Board_size	0.384***	0.384***	0.349***	0.349***	-0.247***	-0.247***	-0.329	-0.329

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Board_own	-0.015***	-0.015***	-0.016***	-0.016***	-0.007***	-0.007***	-0.007	-0.007
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Score(0/1)	0.089***	0.089***	0.102***	0.102***	0.096***	0.096***	0.042	0.042
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year effects	no	no	Yes	Yes	no	No	Yes	Yes
Industry effects	no	no	Yes	Yes	no	no	yes	yes
N	8246	8246	8246	8246	8246	8246	8246	8246
Adj. R^2	0.446	0.446	0.478	0.478	0.490	0.490	0.523	0.523

This table shows the results from ordinary least squares regressions of director compensation on variables for D&O insurance. D&O insurance is measured in two variables: Ln(insurv) is nature logarithm of insurance amount; Ln(insur/a) is nature logarithm of insurance / total assets. Dependent variable of Column (1) to (4) is nature logarithm of average director cash compensation (in thousands) ; Dependent variable of Column (5) to (8) is nature logarithm of average director cash compensation plus cash dividends plus employee stock warrants (in thousands). Other variables are defined in Table 1. The *p*-values based on robust standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1, 5, 10% levels, respectively.

Table 4 Directors' and Officers' Insurance and director cash (total) compensation analysis

Panel A				
Independent variable	(1)	(2)	(3)	(4)
SZ_dum	1.024***	-0.301***	0.006	0.082*
	(0.000)	(0.000)	(0.970)	(0.064)
SZ_dum*Ln(insurv)	-0.094***		-0.006	
	(0.000)		(0.657)	
Ln(insurv)	0.080***		-0.007	
	(0.000)		(0.451)	
SZ_DUM* Ln(insur/a)		-0.070***		0.047***
		(0.004)		(0.000)
Ln(insur/a)		0.068***		-0.034***
		(0.000)		(0.000)
N	8246	8246	8246	8246
Adj. R^2	0.479	0.479	0.523	0.524

Panel B				
Independent variable	(1)	(2)	(3)	(4)
CF_dum	-0.084	-0.160**	-0.558***	0.319***
	(0.777)	(0.049)	(0.000)	(0.000)
CF_dum*Ln(insurv)	-0.003		0.042***	
	(0.909)		(0.001)	
Ln(insurv)	0.031*		-0.033***	
	(0.098)		(0.000)	
CF_dum* Ln(insur/a)		-0.012		0.110***
		(0.568)		(0.000)
Ln(insur/a)		0.036**		-0.069***
		(0.040)		(0.000)

N	8246	8246	8246	8246
Adj. R^2	0.479	0.479	0.524	0.529

Panel C				
Independent variable	(1)	(2)	(3)	(4)
PAY_dum	-0.685**	-0.395***	0.929***	-0.189***
	(0.022)	(0.000)	(0.000)	(0.000)
PAY_dum*Ln(insurv)	0.013		-0.101***	
	(0.583)		(0.000)	
Ln(insurv)	0.029*		0.023***	
	(0.061)		(0.003)	
PAY_dum* Ln(insur/a)		0.038*		0.028***
		(0.074)		(0.010)
Ln(insur/a)		0.020		-0.019**
		(0.183)		(0.016)
N	8246	8246	8246	8246
Adj. R^2	0.494	0.494	0.542	0.539

Panel D				
Independent variable	(1)	(2)	(3)	(4)
MR_dum	2.057***	0.464***	0.929***	0.083**
	(0.000)	(0.000)	(0.000)	(0.027)
MR_dum*Ln(insurv)	-0.155***		-0.101***	
	(0.000)		(0.000)	
Ln(insurv)	0.100***		0.023***	
	(0.000)		(0.010)	
MR_dum* Ln(insur/a)		0.081***		0.009
		(0.000)		(0.349)

Ln(insur/a)		-0.006		-0.016**
		(0.676)		(0.049)
N	8215	8215	8215	8215
Adj. R^2	0.483	0.482	0.527	0.525

Panel E				
Independent variable	(1)	(2)	(3)	(4)
EX_dum	0.591**	-0.165**	0.621***	0.047
	(0.039)	(0.024)	(0.000)	(0.207)
EX_dum*Ln(insurv)	-0.062***		-0.063***	
	(0.008)		(0.000)	
Ln(insurv)	0.063***		0.022**	
	(0.000)		(0.018)	
EX_dum* Ln(insur/a)		-0.002		0.054***
		(0.899)		(0.000)
Ln(insur/a)		0.032**		-0.035***
		(0.046)		(0.000)
N	8246	8246	8246	8246
Adj. R^2	0.481	0.480	0.530	0.530

Panel F				
Independent variable	(1) dirc	(2) dirc	(3) dirt	(4)dirt
INST_dum	0.654**	-0.104**	-0.193	-0.001
	(0.025)	(0.018)	(0.199)	(0.939)
INST_dum*Ln(insurv)	-0.063***		-0.016	
	(0.009)		(0.180)	

Ln(insurv)	0.058***		-0.018**	
	(0.000)		(0.038)	
INST_dum* Ln(insur/a)		-0.034**		-0.046***
		(0.018)		(0.000)
Ln(insur/a)		0.042***		0.005
		(0.003)		(0.442)
N	8240	8240	8240	8240
Adj. R^2	0.479	0.480	0.524	0.526

Panel G				
Independent variable	(1)	(2)	(3)	(4)
INDP_dum	-1.169***	-1.507***	-0.671***	-0.604***
	(0.000)	(0.000)	(0.000)	(0.000)
INDP_dum*Ln(insurv)	0.117***		0.075***	
	(0.000)		(0.000)	
Ln(insurv)	-0.007		-0.040***	
	(0.625)		(0.000)	
INDP_dum* Ln(insur/a)		0.148***		0.068***
		(0.000)		(0.000)
Ln(insur/a)		-0.053***		-0.033***
		(0.000)		(0.000)
N	8246	8246	8246	8246
Adj. R^2	0.480	0.450	0.495	0.526

This table shows the results from ordinary least squares of director compensation on variables for D&O insurance. Dependent variable of Column (1) to (2) is nature logarithm of average director cash compensation (in thousands) ; Dependent variable of Column (3) to (4) is nature logarithm of average director cash compensation plus cash dividends plus employee stock warrants (in thousands). The control variables include firm characteristic variables: Size, Mv/a, ROA, Fix/a, Var, Debt/a, Capex/a, g overnance variables: Instown, Indp, Dual, Board_size, Board_own, Score as well as firm and year indicators. Panel A reports the coefficients on the fixed effects under the financial constraints criteria, SZ_dum is a dummy variable which is equals to 1 (0) when the book assets of the sample is below (above) the medium value.

Panel B reports the coefficients on the fixed effects under the financial constraints criteria, CF_dum is a dummy variable which is equals to 1 (0) when the cash flow of the sample is be low (above) the medium value. Panel C reports the coefficients on the fixed effects under the financial constraints criteria, PAY_dum is a dummy variable which is equals to 1 when the sample pay dividends in the year, otherwise, 0. Panel D reports the coefficients on the fixed effects under the board activity, MR_dum is a dummy variable which is equals to 1 when the value of (the board members to attend the meeting by herself rather than by representatives/all members) is above the medium value, otherwise, 0. Panel E reports the coefficients on the fixed effects under the director experience, EX_dum is a dummy variable which is equals to 1 when the value of the director's expereince is above the medium value, otherwise, 0. Panel F and Panel G reports the coefficients on the fixed effects under the corporate governance criteria , INST_dum is a dummy variable which is equals to 1 (0) when institutional ownership below (above) the medium value, otherwise, 0. INDP_dum is a dummy variable which is equals to 1 (0) when independent directos/board directors is below (above) the medium value. Other variables are defined in Table 1. The *p*-values based on robust standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1, 5, 10% levels, respectively.

Table 5 Directors' and Officers' Insurance and director excess compensation

Independent variable	(1)	(2)	(3)	(4)
Ln(insurv)	-0.040		-0.071	
	(0.018)		(0.001)	
Ln(insur/a)		-0.040		-0.071
		(0.018)		(0.001)
Size	0.480	0.439	0.502	0.430
	(0.000)	(0.000)	(0.000)	(0.000)
Mv/a	0.095	0.095	0.094	0.094
	(0.000)	(0.000)	(0.000)	(0.000)
ROA	1.632	1.632	1.990	1.990
	(0.000)	(0.000)	(0.000)	(0.000)
Fix/a	-0.197	-0.197	-0.208	-0.208
	(0.000)	(0.000)	(0.000)	(0.000)
Var	-0.011	-0.011	-0.022	-0.022
	(0.002)	(0.002)	(0.000)	(0.000)
Debt/a	-0.340	-0.340	-0.277	-0.277
	(0.000)	(0.000)	(0.004)	(0.004)
Capex/a	0.165	0.165	-0.128	-0.128
	(0.587)	(0.587)	(0.658)	(0.658)
Instown	0.014	0.014	-0.160	-0.160
	(0.870)	(0.870)	(0.064)	(0.064)
Indp	-0.398	-0.398	-0.289	-0.289
	(0.000)	(0.000)	(0.002)	(0.002)
Dual (0/1)	0.096	0.096	0.089	0.089
	(0.089)	(0.089)	(0.097)	(0.097)
Board_size	-0.681	-0.681	-0.820	-0.820

	(0.000)	(0.000)	(0.000)	(0.000)
Board_own	-0.002	-0.002	-0.001	-0.001
	(0.087)	(0.086)	(0.432)	(0.432)
Score(0/1)	0.050	0.050	0.103	0.103
	(0.064)	(0.064)	(0.000)	(0.000)
Year effects	No	no	Yes	Yes
Industry effects	No	no	Yes	Yes
N	1026	1026	1026	1026
Adj. R^2	0.679	0.679	0.750	0.750

This table shows the results from ordinary least squares regressions of excess director compensation on variables for D&O insurance. D&O insurance is measured in two variables: Ln(insurv) is nature logarithm of insurance amount; Ln(insur/a) is nature logarithm of insurance / total assets. Dependent variable of Column (1) to (4) is nature logarithm of excess director compensation (in thousands) estimated from the procedure of Brick et al. (2006). Other variables are defined in Table 1. The *p*-values based on robust standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1, 5, 10% levels, respectively.

Table 6 Directors' and Officers' Insurance and excess director compensation

Panel A		
Independent variable	(1)	(2)
SZ_dum	1.020**	0.086
	(0.033)	(0.454)
SZ_dum*Ln(insurv)	-0.090**	
	(0.023)	
Ln(insurv)	-0.025	
	(0.377)	
SZ_DUM* Ln(insur/a)		0.046
		(0.170)
Ln(insur/a)		-0.091***
		(0.001)
N	987	987
Adj. R^2	0.754	0.753

Panel B		
Independent variable	(1)	(2)
CF_dum	0.809*	0.200*
	(0.084)	(0.069)
CF_dum*Ln(insurv)	-0.063	
	(0.103)	
Ln(insurv)	-0.037	
	(0.193)	
CF_dum* Ln(insur/a)		0.046
		(0.141)
Ln(insur/a)		-0.088***
		(0.001)

N	987	987
Adj. R^2	0.752	0.752

Panel C		
Independent variable	(1)	(2)
PAY_dum	0.322	-0.370***
	(0.444)	(0.001)
PAY_dum*Ln(insurv)	-0.051	
	(0.139)	
Ln(insurv)	-0.041*	
	(0.091)	
PAY_dum* Ln(insur/a)		-0.023
		(0.514)
Ln(insur/a)		-0.050**
		(0.035)
N	993	993
Adj. R^2	0.770	0.769

Panel D		
Independent variable	(1)	(2)
MR_dum	0.080	-0.031
	(0.834)	(0.741)
MR_dum*Ln(insurv)	-0.001	
	(0.959)	
Ln(insurv)	-0.069**	
	(0.018)	
MR_dum* Ln(insur/a)		-0.027
		(0.312)

Ln(insur/a)		-0.052*
		(0.067)
N	1010	1010
Adj. R^2	0.742	0.742

Panel E		
Independent variable	(1)	(2)
EX_dum	0.710***	0.106
	(0.000)	(0.235)
EX_dum*Ln(insurv)	-0.146***	
	(0.000)	
Ln(insurv)	0.009	
	(0.741)	
EX_dum* Ln(insur/a)		0.057**
		(0.027)
Ln(insur/a)		-0.112***
		(0.000)
N	1025	1025
Adj. R^2	0.757	0.753

Panel F		
Independent variable	(1)	(2)
INST_dum	2.735***	0.105**
	(0.000)	(0.047)
INST_dum*Ln(insurv)	-0.222***	
	(0.000)	
Ln(insurv)	0.033	
	(0.251)	

INST_dum* Ln(insur/a)		0.049***
		(0.007)
Ln(insur/a)		-0.092***
		(0.000)
N	993	993
Adj. R^2	0.762	0.753

Panel G		
Independent variable	(1)	(2)
INDP_dum	-1.757***	0.739***
	(0.000)	(0.000)
INDP_dum*Ln(insurv)	0.104***	
	(0.003)	
Ln(insurv)	-0.094***	
	(0.000)	
INDP_dum* Ln(insur/a)		-0.028*
		(0.059)
Ln(insur/a)		-0.034**
		(0.050)
N	993	993
Adj. R^2	0.759	0.681

This table shows the results from ordinary least squares of excess director compensation on variables for D&O insurance. Dependent variable of Column (1) to (2) is nature logarithm of excess director compensation (in thousands) estimated from the procedure of Brick et al. (2006) . The control variables include firm characteristic variables: Size, Mv/a, ROA, Fix /a, Var, Debt/a, Capex/a, governance variables: Instown, Indp, Dual, Board_size, Board_own, Score as well as firm and year indicators. Panel A reports the coefficients on the fixed effects under the financial constraints criteria, SZ_dum is a dummy variabl e which is equals to 1 (0) when the book assets of the sample is below (above) the medium value. Panel B reports the coefficients on the fixed effects under the financial constraints criteria, CF_dum is a dummy variable which is equals to 1 (0) when the cash flow of the sample is below (above) the medium value. Panel C reports the coefficients on the fixed effects under the financial constraints criteria, PAY_dum is a dummy variable which is equals to 1 when the sample pay dividends in the year, otherwise, 0. Panel D reports the coefficients on the fixed effects under the board activity, MR_dum is a dummy variable which is equals to 1 when the value of

(the board members to attend the meeting by herself rather than by representatives/all members) is above the medium value, otherwise, 0. Panel E reports the coefficients on the fixed effects under the director experience, EX_dum is a dummy variable which is equals to 1 when the value of the director's expereince is above the medium value, otherwise, 0. Panel F and Panel G reports the coefficients on the fixed effects under the corporate governance criteria , INST_dum is a dummy variable which is equals to 1 (0) when institutional ownership below (above) the medium value, otherwise, 0. INDP_dum is a dummy variable which is equals to 1 (0) when independent directos/board directors is below (above) the medium value . Other variables are defined in Table 1. The *p*-values based on robust standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1, 5, 10% levels, respectively.

Table 7 The impact of Directors' and Officers' Insurance using market-to-book regressions

The table shows the results for the value regressions. All models are estimated as fixed effe cts regressions. This table reports the coefficients for the value regressions on D&O insurance. Colum (1) and (2) are the results on the sample. Colum (3) and (4) are the results on the sample whose excess director compensation>0. The dependent variable in all models is the ratio of market value to assets. D&O insurance is measured in two variables: Ln(insurv) is nature logarithm of insurance amount; Ln(insur/a) is nature logarithm of insurance / total assets. The control variables include: the current, the two-year lagged change, the two-year future change ratios of earnings over net assets; the two-year lagged change, the two-year future change ratios of assets over net assets; the current, the two-year lagged change, the two-year future change ratios of R&D over net assets; the current, the two-year lagged change, the two-year future change ratios of interest expenses over net assets, the current, the two-year lagged change, the two-year future change ratios of dividends over net assets; the two-year future change ratios of market value over net assets. The *p*-values based on robust standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1, 5, 10% levels, respectively. All estimations include industry and year indicators as well as intercept term.

	(1)	(2)	(3)	(4)
Ln(insurv)	-0.016		-0.100	
	(0.000)		(0.000)	
Ln(insur/a)		0.058		0.042
		(0.000)		(0.003)
E	-0.046	0.090	0.198	-0.162
	(0.662)	(0.392)	(0.520)	(0.594)
dEt.	0.685	0.610	3.671	3.607
	(0.000)	(0.000)	(0.000)	(0.000)
dEt+1	0.860	0.827	2.642	2.510
	(0.000)	(0.000)	(0.000)	(0.000)
RDt	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
dRDt	3.232	3.287	1.706	3.258
	(0.000)	(0.000)	(0.186)	(0.013)
dRDt+1	4.136	3.875	3.761	3.056
	(0.000)	(0.000)	(0.015)	(0.051)
Dt	8.803	8.930	8.819	9.590

	(0.000)	(0.000)	(0.000)	(0.000)
dDt	-0.246	-0.334	-0.665	-0.757
	(0.218)	(0.091)	(0.203)	(0.154)
dDt+1	6.981	7.032	0.733	1.714
	(0.000)	(0.000)	(0.376)	(0.036)
Rt	-6.638	-3.938	16.522	12.139
	(0.000)	(0.002)	(0.000)	(0.003)
dRt	3.469	3.284	21.474	21.033
	(0.011)	(0.015)	(0.000)	(0.000)
dRt+1	-4.066	-2.816	-2.166	-2.947
	(0.036)	(0.143)	(0.615)	(0.499)
dNAt	0.259	0.279	0.354	0.331
	(0.000)	(0.000)	(0.005)	(0.010)
dNAt+1	0.259	0.248	0.916	0.843
	(0.000)	(0.000)	(0.000)	(0.000)
dMVt+1	-0.241	-0.247	-0.499	-0.478
	(0.000)	(0.000)	(0.000)	(0.000)
No. of Obs.	8694	8694	1003	1003
Adj. R^2	0.560	0.570	0.673	0.665

Table 8 The impact of financial constraint on Directors' and Officers' Insurance using market-to-book regressions

Panel A				
Independent variable	(1)	(2)	(3)	(4)
SZ_dum	-0.539	0.353	-0.191	0.825
	(0.000)	(0.000)	(0.689)	(0.000)
SZ_dum*Ln(insurv)	0.058		0.027	
	(0.000)		(0.446)	
Ln(insurv)	-0.023		-0.064	
	(0.000)		(0.007)	
SZ_DUM* Ln(insur/a)		0.070		0.184
		(0.000)		(0.000)
Ln(insur/a)		0.004		-0.097
		(0.499)		(0.000)
N	8694	8694	997	997
Adj. R^2	0.574	0.578	0.687	0.697

Panel B				
Independent variable	(1)	(2)	(3)	(4)
CF_dum	-0.315	0.230	0.093	0.387
	(0.004)	(0.000)	(0.825)	(0.000)
CF_dum*Ln(insurv)	0.036		-0.010	
	(0.000)		(0.765)	
Ln(insurv)	-0.023		-0.105	
	(0.000)		(0.000)	
CF_dum* Ln(insur/a)		0.045		0.110
		(0.000)		(0.000)
Ln(insur/a)		0.027		-0.007

		(0.000)		(0.704)
N	8694	8694	997	997
Adj. R^2	0.566	0.576	0.673	0.669

Panel C				
Independent variable	(1)	(2)	(3)	(4)
PAY_dum	0492	0.378	1.029	0.676
	(0.000)	(0.000)	(0.017)	(0.000)
PAY_dum*Ln(insurv)	-0.025		-0.076	
	(0.007)		(0.033)	
Ln(insurv)	-0.004		-0.074	
	(0.386)		(0.000)	
PAY_dum* Ln(insur/a)		0.067		0.171
		(0.000)		(0.000)
Ln(insur/a)		0.029		-0.002
		(0.000)		(0.923)
N	8694	8694	1003	1003
Adj. R^2	0.569	0.580	0.676	0.676

The table shows the results for the value regressions. All models are estimated as fixed effects regressions. This table reports the coefficients for the value regressions on D&O insurance. Colum (1) and (2) are the results on the sample. Colum (3) and (4) are the results on the sample whose excess director compensation>0. Panel A reports the coefficients on the fixed effects under the financial constraints criteria, SZ_dum is a dummy variable which is equals to 1 (0) when the book assets of the sample is below (above) the medium value. Panel B reports the coefficients on the fixed effects under the financial constraints criteria, CF_dum is a dummy variable which is equals to 1 (0) when the cash flow of the sample is below (above) the medium value. Panel C reports the coefficients on the fixed effects under the financial constraints criteria, PAY_dum is a dummy variable which is equals to 1 when the sample pay dividends in the year, otherwise, 0. The dependent variable in all models is the ratio of market value to assets. D&O insurance is measured in two variables: Ln(insurv) is nature logarithm of insurance amount; Ln(insur/ a) is nature logarithm of insurance / total assets. The control variables include: the current, the two-year lagged change, the two-year future change ratios of earnings over net assets; the two-year lagged change, the two-year future change ratios of assets over net assets; the current, the two-year lagged change, the two-year future change ratios of R&D over net assets; the current, the two-year lagged change, the two-year future change ratios of interest expenses over net assets, the current, the two-year lagged change, the two-year future change ratios of dividends over net assets; the two-year future change ratios of market value over net assets. The *p*-values based on robust standard errors are reported in parentheses. All estimations include industry and year indicators as well as intercept term.

Table 9 The impact of board activity on Directors' and Officers' Insurance using market-to-book regressions

Panel A				
Independent variable	(1)	(2)	(3)	(4)
MR_dum	0.082	0.002	-0.392	0.208
	(0.445)	(0.927)	(0.284)	(0.025)
MR_dum*Ln(insurv)	-0.009		0.020	
	(0.295)		(0.493)	
Ln(insurv)	-0.011		-0.124	
	(0.083)		(0.000)	
MR_dum* Ln(insur/a)		0.010		0.099
		(0.155)		(0.000)
Ln(insur/a)		0.054		-0.003
		(0.000)		(0.843)
N	8657	8657	995	995
Adj. R^2	0.560	0.571	0.680	0.675

Panel B				
Independent variable	(1)	(2)	(3) dirt	(4)dirt
EX_dum	0.283	0.141	0.003	-0.088
	(0.008)	(0.000)	(0.991)	(0.326)
EX_dum*Ln(insurv)	-0.016		0.009	
	(0.068)		(0.768)	
Ln(insurv)	-0.006		-0.098	
	(0.295)		(0.000)	
EX_dum* Ln(insur/a)		0.018		-0.071
		(0.010)		(0.006)

Ln(insur/a)		0.047		0.091
		(0.000)		(0.000)
N	8657	8657	995	995
Adj. R^2	0.564	0.573	0.677	0.674

The table shows the results for the value regressions. All models are estimated as fixed effects regressions. This table reports the coefficients for the value regressions on D&O insurance. Colum (1) and (2) are the results on the sample. Colum (3) and (4) are the results on the sample whose excess director compensation>0. Panel A reports the coefficients on the fixed effects under the board activity, MR_dum is a dummy variable which is equals to 1 when the value of (the board members to attend the meeting by herself rather than by representatives/all members) is above the medium value, otherwise, 0. Panel B reports the coefficients on the fixed effects under the director experience, EX_dum is a dummy variable which is equals to 1 when the value of the director's expereince is above the medium value, otherwise, 0. The dependent variable in all models is the ratio of market value to assets. D&O insurance is measured in two variables: Ln(insurv) is nature logarithm of insurance amount; Ln(insur/a) is nature logarithm of insurance / total assets. The control variables include: the current, the two-year lagged change, the two-year future change ratios of earnings over net assets; the two-year lagged change, the two-year future change ratios of assets over net assets; the current, the two-year lagged change, the two-year future change ratios of R&D over net assets; the current, the two-year lagged change, the two-year future change ratios of interest expenses over net assets, the current, the two-year lagged change, the two-year future change ratios of dividends over net assets; the two-year future change ratios of market value over net assets. The *p*-values based on robust standard errors are reported in parentheses. All estimations include industry and year indicators as well as intercept term.

Table 10 The impact of governance on Directors' and Officers' Insurance using market-to-book regressions

Panel A				
Independent variable	(1)	(2)	(3)	(4)
INST_dum	-0.136	0.020	2.542	-0.073
	(0.217)	(0.036)	(0.000)	(0.008)
INST_dum*Ln(insurv)	0.014		-0.215	
	(0.114)		(0.000)	
Ln(insurv)	-0.019		-0.009	
	(0.001)		(0.689)	
INST_dum* Ln(insur/a)		0.012		0.030
		(0.000)		(0.000)
Ln(insur/a)		0.051		0.036
		(0.000)		(0.024)
N	8657	8657	995	995
Adj. R^2	0.560	0.571	0.689	0.670

Panel B				
Independent variable	(1)	(2)	(3)	(4)
INDP_dum	0.263	-0.181	1.573	-0.043
	(0.024)	(0.000)	(0.000)	(0.656)
INDP_dum*Ln(insurv)	-0.028		-0.134	
	(0.002)		(0.000)	
Ln(insurv)	-0.005		-0.052	
	(0.358)		(0.008)	
INDP_dum* Ln(insur/a)		-0.032		0.018

		(0.000)		(0.482)
Ln(insur/a)		0.068		0.028
		(0.000)		(0.125)
N	8657	8657	995	995
Adj. R^2	0.563	0.573	0.680	0.668

The table shows the results for the value regressions. All models are estimated as fixed eff ects regressions. This table reports the coefficients for the value regressions on D&O insurance. Colum (1) and (2) are the results on the sample. Colum (3) and (4) are the results on the sample whose excess director compensation>0. Panel A and Panel B reports the coefficients on the fixed effects under the corporate governance criteria , INST_dum is a dummy variable which is equals to 1 (0) when institutional ownership below (above) the medium value, otherwise, 0. INDP_dum is a dummy variable which is equa ls to 1 (0) when independent directos/board directors is below (above) the medium value . The dependent variable in all models is the ratio of market value to assets. D&O insurance is measured in two variables: Ln(insurv) is nature logarithm of insurance amount; Ln(insur/a) is nature logarithm of insurance / t otal assets. The control variables include: the current, the two-year lagged change, the two-year future change ratios of earnings over net assets; the two-year lagged change, the two-year future change ratios of assets over net assets; the current, the two -year lagged change, the two-year future change ratios of R&D over net assets; the current, the two -year lagged change, the two-year future change ratios of interest expenses over net assets, the curre nt, the two-year lagged change, the two-year future change ratios of dividends over net assets; the two -year future change ratios of market value over net assets. The *p*-values based on robust standard errors are reported in parentheses. All estimations inc lude industry and year indicators as well as intercept term.