Directors and officers liability insurance: an analysis of determinants of disclosure

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In this paper, we investigate factors that explain the disclosure of Directors and officers liability (D&O) insurance. D&O insurance is used extensively in top management compensation. Surprisingly, only a handful of firms listed in the US disclose their D&O insurance practices (based on our extensive search of publicly available databases on corporate disclosure). Using a sample of firms from 2004 to 2008, we focus on level of competition, threat of increase in lawsuit, and internal governance to examine the determinants of the disclosure practices. Consistent with the hypothesis, the results show that firms in competitive industries, firms with a high threat of lawsuits, big firms, and firms with weak internal governance are less likely to disclose D&O insurance. We further find that variations in the scope and nature of disclosure are associated with the firms' litigation risk and governance structure.

Keywords: directors and officers liability insurance; disclosure; determinants

1. Introduction

Directors' and officers' (D&O) insurance has become an essential part of top executive contracts among publicly traded firms in the US. A key feature of the insurance is the protection it affords management against lawsuits and claims by shareholders, clients, and employees. According to Towers Perrin (2004), 99% of all US firms surveyed in 2004 have D&O liability insurance. The widespread use of such insurance for top management has been attributed to the rising rate of lawsuits against directors and officers. Weisdorn, McCord, and William (2006) report that complaints against directors have increased by 137% since 1995, while Zinkewicz (2006) reports a 30% increase in the number of complaints against directors and officers between 2004 and 2005. Lawsuits often create disincentives for directors to serve on the board (Linck, Netter, and Yang 2009). A recent survey by Gardner and Fulton (2007) shows that directors are hesitant to serve on a firm's board unless they are adequately protected from lawsuits.

Although D&O insurance is widespread among US registered firms, existing standards do not require the firms to disclose such policies. Advocates of disclosure argue that details of the D&O policy will reduce information asymmetry between the firm and outsiders (Griffith 2006). From an accounting standpoint, the relative importance of disclosing D&O policy rests on the extent to which the information enhances the

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completeness and/or relevance of financial statements. The "relevance" criterion is reiterated in recent forums sponsored by the FASB (2012) on the effectiveness of financial statement disclosures. The forums are part of the FASB's project on disclosure framework that began on July 2012 with an *Invitation to Comment*. One of the key ideas raised during the forum discussions is the need for registrants to provide disclosures that allow users to assess the risk of litigation or regulatory action. The significance of this latter point for the disclosure of D&O policy is that, as Griffith (2006) observes, details of the D&O policy such as premiums, coverage limits, and retention under each type of insurance provide important clues about underwriters' private information regarding the firm's governance and litigation risks. Given underwriters' skill in risk assessment, details of the D&O policy can yield signals with which outsiders and auditors can assess firms' internal control quality and litigation risk (Griffith 2006; Cao and Narayanamoorthy 2014).

From the market's standpoint, D&O policy information would be valuable if it facilitates uncertainty resolution, influences investors' expectations, or the precision of such expectations. Ordinarily, insurers focus on pricing a firm's litigation risk, employing expert evaluation of the firm's business environment and governance risks. Although investors also make judgments about firm governance and business risks, they rely largely on observable elements of the governance process and focus more on the implications of those elements for future returns. Underwriters, by contrast, are highly skilled in evaluating a firm's downside risks and focus on business and governance factors that predict investment failures and loss of shareholder wealth. As a major part of the evaluation, underwriters elicit detailed private/proprietary information, not only about the firm as an entity but also about key officers of the firm.

To preserve confidentiality of their communications, the insurer and the firm typically enter into non-disclosure agreement that gives insurers access to the details of the firm's internally held operating, investing, and financing plans and to private information about key officers of the firm (Baker and Griffith 2007a, 2007b).The data often cover strategic plan areas such as acquisition and takeover plans, proposed restructuring, multinational growth plans, detailed description of internal control structure, executive compensation formulas, personal profiles, history of top executives, etc., beyond those available from public sources. Key elements of the process involve an assessment of the risk of governance failure, the uncertainty of the business model, and the prospect that such risks will lead to stock prices declines and investment losses, which are the primary triggers of shareholder litigation (Baker and Griffith 2007a). The governance risk assessment further spans elements of the internal control structure with emphasis on aspects of managers' behavior that could exacerbate internal control problems and investment risk. The process ends with an estimate of the firm's litigation risk and insurance price that is directly related to the level coverage and litigation risk.

The connection between the insurance price, on one hand, and risk of governance failure and uncertainty of the business model via litigation risk, on the other raises the prospect that details of the D&O policy, including premium and coverage level, provide value-relevant clues not only about the prospects for governance failure but also about the prospects for investment *cum* shareholder losses. Chalmers, Dann, and Harford (2002), for example, document that details of coverage contain clues about future performance. Using proprietary data on 72 American initial public offering (IPO) firms between 1992 and 1996, they find that firms with higher coverage at the time of IPO are more likely to be sued subsequently for poor stock performance; they further find that insurers were able to price the subsequent stock performance by charging higher

premiums prior to IPO to firms whose post-IPO performance turned out to be poor. In other words, higher D&O premium and/or coverage contains insurers' private beliefs about the risk of governance failure and prospects for future investment losses. Lin et al. (2013) show that higher levels of D&O coverage are associated with greater risk taking and higher probability of financial restatements.[1] In addition, Lin, Officer, and Zou (2011) find lower returns for acquirers whose executives have a higher level of D&O insurance coverage. A key insight from these studies is that elements of D&O policy contain clues about future investment losses and performance declines.

Currently, only a handful of firms provide information about their D&O insurance policy. Even among the firms that discuss their policies, wide disparity exists in the scope of disclosure. In some cases, the disclosing firms simply report the amount of premium or amount of coverage and deductible amount. In other cases, the firms disclose plan details including premium, coverage, deductibility, policy period, and insurer. What is not clear is whether firms disclose (withhold) their D&O policy primarily to signal (conceal) low (high) governance risks and/or low (high) litigation risks, or for other reasons tied to disclosure benefits (costs). To shed light into the question, we investigate the determinants of D&O insurance disclosures among US registered firms. We draw from the literature on voluntary disclosures and test the extent to which factors that explain voluntary disclosures are associated with the disclosure/non-disclosure of D&O policies. For the analysis, we focus on competition, threat of lawsuit, and internal governance as potential factors that influence the disclosure of D&O insurance.

The results of the analyses are as follows. Using a sample of 253 firms that disclosed D&O policies as test firms, and a control sample of 1201 firms that did not disclose D&O policy information, we find that the test firms are smaller, face less competition, have lower threat of lawsuit, and possess stronger internal governance. We also find that firms that disclose only premium information or only coverage limits have lower proportion of outside directors, are less likely to be cross-listed, and have increased litigation risk compared to firms that disclose both premium and coverage information. In a further analysis, we find that firms with higher litigation risk and higher proportion of outside directors are more likely to disclose only qualitative D&O information, while larger firms and firms with higher CEO ownership are less likely to disclose only qualitative information about their D&O policy.

This study makes several contributions. First, it extends the literature on D&O insurance by shedding light on factors that influence the voluntary disclosure of D&O policies in the US Although D&O insurance is widely used in the US, research in the area is still sparse. Empirical analysis of the effects of such policies focuses largely on Canadian and UK firms for which the policy disclosure is mandatory. Since disclosure of the D&O policy is not required in the US, our analysis highlights factors other than the force of regulation that affect disclosure. Further, the current wave of D&O insurance in the US raises questions about the economic incentives for D&O insurance. Although our analysis does not address questions of incentives directly, it points to several factors that create incentives for partial or non-disclosure. In the sense of our results, we suggest that details about a firm's D&O policy can provide outsiders and auditors helpful hints about the quality of a firm's internal governance and litigation risks.

The rest of the paper proceeds as follows: Section 2 provides information on D&O insurance while Section 3 reviews prior literature and develops the hypotheses. Section 4 discusses our sample selection process and Section 5 describes the research design. Section 6 reports the results and Section 7 concludes the paper.

2.   Background: D&O insurance

D&O insurance protects the directors and officers from claims of shareholders, clients, and employees to the extent that the directors and officers have acted in good faith. It reimburses the firm for the costs of defending and settling lawsuits, and pays the D&O costs directly when the firm cannot. Coverage is provided as long as the director fulfills his or her fiduciary duty to shareholders. In return, the firm pays premiums that reflect the insurers' assessment of the firm's litigation risk. Factors known to affect the risk assessment include the firm's history of litigation, business/personal attributes of directors and top officers, activities of the firm, and amount of coverage (Core 2000; Baker and Griffith 2007a). The premium a firm pays, therefore, reflects the firm's litigation risk, business risk, and amount of coverage.

Although D&O insurance covers a wide range of claims against the directors and officers, it has three basic exclusions. These are exclusions for fraudulent activities (*fraud exclusion*), existing or pending claims prior to the commencement of the current policy (*prior claim exclusion*), and claims made by one director/officer against other directors/officers of the corporation (*insured* vs. *insured exclusion*). In addition, D&O insurance does not cover claims pertaining to the Employee Retirement Income Security Act, claims alleging bodily injury or emotional distress, or claims arising from service to other organizations.

3.   Literature review and hypotheses

3.1.   *Disclosure of D&O insurance: incentives and determinants*

The Towers Perrin survey (2004) shows that 99% of surveyed firms listed on the US stock exchange maintain D&O insurance. However, few firms disclose the policy. Even among firms that disclose the information, details of the disclosure vary considerably. In some cases, the disclosing firm simply reports the amount of premium or the amount of coverage and deductible. In more elaborate cases, the firm reports the premium, coverage, deductible, policy period, and insurance carrier. Since the disclosure of D&O policy is not required in the US, it is not clear why some firms disclose their D&O policies, whereas other firms withhold such information.

There is a view that voluntary disclosure plays an important role in reducing information asymmetries between the firm and investors (see, Healy and Palepu 2001, for a survey of the literature). Sengupta (1998), for example, finds that disclosure reduces the informational difference between the firm and lenders and, thus, leads to lower cost of capital. Leuz and Verrecchia (2000) find similar results when they examine German firms that switched from the German GAAP to an international or US GAAP-reporting regime. They find decreases in bid–ask spreads and increases in trading volumes following an increase in disclosures. Tucker (2010) examines the effect of disclosure on a firm's reputation. Using the number of analysts following as a proxy for firm's reputation, she finds a decrease in the number of analysts following when the firm fails to warn investors about the negative earnings news.

Disclosure, however, is not optimal in all settings. It is in the interest of the shareholders to avoid disclosure when the cost associated with such disclosure exceeds the benefit. The cost of disclosure often arises from the loss of proprietary information or greater political costs as a result of increased scrutiny or litigation. Dye (1986) and Verrecchia (1983) argue that nondisclosure is optimal when firms fear a loss of proprietary information. Suijs (2007) shows that firms often disclose their private information

partially when they are unsure of investor's response to the disclosure. Johnson, Kasznik, and Nelson (2001) examine the frequency of forecasts prior to the passage of the Private Securities Litigation Reform Act of 1995, and find a significant increase in disclosure following the reduction in the firm's litigation risk.

In general, empirical work on the disclosure of D&O policy is sparse. Proponents of disclosure, however, point to certain benefits. Griffith (2006), for example, argues that a disclosure of D&O policy helps investors form judgments about the firm's governance and litigation risk. From a firm's standpoint, however, there are costs to such disclosures. For instance, the disclosure of coverage details can create incentives for shareholder lawsuits if coverage is perceived as a protection against self-serving actions by the executives. It can also provide clues about the firm's risk-hedging practices and create a competitive disadvantage. However, whether such factors affect a firm's decision to disclosure or withhold the policy information is an empirical issue. Our analysis focuses on competition, threat of lawsuit, and internal governance as potential determinants of the disclosure of D&O insurance.

3.2. Hypotheses

3.2.1. Competition

One factor noted to discourage voluntary disclosure is concern for loss of proprietary information (Verrecchia 1983; Dye 1985). In particular, firms often withhold information when there is concern that opponents will exploit it (e.g. Darrough and Stoughton 1990; Wagenhofer 1990; Gigler 1994; Clinch and Verrecchia 1997). Such concern is greater among firms facing strong competition in the product market. Bradbury and Hooks (2005), for example, report that electric utility firms reduced the disclosure of forward-looking and segment data in response to recent changes in the industry structure that culminated in greater product market competition.

There is a similar view that firms in competitive markets have greater incentive to withhold details of their employment practices. On one hand, firms design executive contracts to attract and retain talents, and can be expected to realize both goals when they offer competitive contracts, on the other hand, contract negotiations are typically held in private and few firms, especially in competitive markets, voluntarily disclose details of the contracts. The argument is that firms in competitive markets incur greater costs from disclosing proprietary details of the executives' contracts (Gerakos 2010). Details of such contracts expose a firm's hiring and incentive strategies, which can be exploited by competitors in a variety of ways. This point is illustrated in an excerpt from 2009 proxy statement filed by 3COM Corp., which states:

> The Company believes that disclosure of the actual performance targets for its cash incentive program (and its equity program …) would cause substantial harm to its competitive position. Such disclosure would essentially inform competitors of Company expectations, both historically and for the current fiscal year, for its business, financial and operational strategies. The disclosure of such performance targets would provide significant visibility into, and allow the Company's competitors to reach significant conclusions about, our plans and priorities, including: designated plans for growth, profitability, cash flow, investment or increased operational focus; allocation of resources; and changes in direction. The Company believes this would give competitors an unfair advantage and could result in a materially adverse impact on our stock price and negatively affect our stockholders.

The noted effect of competition on compensation disclosure has a direct import for the disclosure of the D&O policy. Gardner and Fulton (2007) observe that the market

for skilled directors is competitive and note further that in the absence of adequate D&O coverage, "most boards would be unable to attract or retain directors" (see, also, Baker and Griffith 2007a). Under such conditions, the incentive to withhold information about D&O policy can be strong: the incentive arises from the possibility that such disclosures may offer clues about a firm's priorities and incentive strategies. In competitive markets, such information can be exploited by a firm's strategic opponents not only to undermine the firm's competitive position, but also to bid up the cost of retaining key officers or hiring new ones.[2] By contrast, firms in less competitive markets can afford to be more transparent with their D&O insurance practices since there is limited competition for their products and officers. We thus posit that the likelihood of disclosure will be high among firms in less competitive markets. The formal hypothesis is:

> H1: Firms in less competitive market are more likely to disclose their D&O insurance policy.

3.2.2. *Risk of coverage-induced lawsuit*

We also predict that fear of legal challenges and adverse shareholder reaction will reduce the likelihood of disclosure. The modern business climate is characterized by intense media scrutiny, public sentiment against executive pay structure, political push to curtail incentive pay, and appetite to sue firms (Gardner and Fulton 2007; Banham 2009). A disclosure of D&O policy can raise the specter of costly actions against a firm, more so when the firm is perceived to have greater scope for litigation and mismanagement. For example, details of D&O policy can invite more intense scrutiny and legal challenges by shareholders and interest groups if the policy is seen as an effort to insulate officers against fallouts from excessive risk taking or self-serving actions. To the extent that such disclosures create a perception that the firm is insulating officers against actions that could sacrifice shareholders' welfare, the firm will have greater difficulty obtaining competitive D&O policies and/or recruiting skilled officers (Gardner and Fulton 2007). Aware of the looming costs, firms at higher risk will be reluctant to disclose their D&O policy.[3]

The literature on shareholder lawsuits also suggests that affluent companies are more likely to be sued. Bohn and Choi (1996) document that plaintiffs often consider the firm's ability to pay before initiating lawsuits. Analyzing a sample of firms in the computer industry that went public in 1983, Alexander (1991) finds that the six largest firms were sued. He argues that while smaller IPO firms carry risks similar to larger firms, the benefits of suing larger firms are greater because of the latter's ability to pay. We thus expect firms with high litigation risk and large firms to be less likely to disclose their D&O policies.

> H2: Firms with a high threat of lawsuits are less likely to disclose D&O insurance policy

3.2.3. *Internal governance and loss expectation*

Details of D&O policy contain underwriters' private information about a firm's governance risk, investment risk, and potential losses from the expected governance failure (Griffiths 2006; Baker and Griffith 2007a). Disclosure of such details is expected to impact investors' expectation for several reasons: first, firms in which governance failures are observed generally experience cash outflow via costs of complying with legal

or regulatory sanctions that may be imposed. Such firms also face credibility problems and a general mistrust of their financial information. Furthermore, loss episodes are often viewed as evidence of governance problems and increased risk of future losses. If the prospect for these economic events are embedded in the elements of D&O policy, then rational investors can be expected to incorporate the implications of such prospects into their expectations and valuation judgment (see, e.g. Chalmers, Dann, and Harford 2002; Lin, Officer, and Zou 2011; Lin et al. 2013; Cao and Narayanamoorthy 2014). Question then arises whether firms would voluntarily disclose plan details, aware of the likely impact of such disclosures on investors' expectation. Noting that the risk of governance failure conveys negative news, firms with weak governance would be more likely to withhold plan information, suspicious that disclosure would more credibly expose the level/scope of their governance problems and provoke negative capital market effects. Managers of poorly governed firms with weak governance are also shown to be more opaque with their employment practices to conceal their self-serving behavior and pay packages that appear excessive (Baker and Griffith 2007b).

In contrast to the disclosure practices of weakly governed firms, there is preponderance of evidence that strong corporate governance promotes transparency and reduces information asymmetry between the firm and outsiders. Haniffa and Cooke (2002), for example, find a significant association between governance and disclosure among Malaysian-listed firms. Eng and Mak (2003) show that firms with strong governance are more likely to provide voluntary disclosures that reduce information gap between the firm and outsiders. Laksmana (2008) also finds that firms with strong governance provide greater disclosures of their compensation arrangements. The premise is that, for firms with strong governance structures, board members are unlikely to insist on D&O insurance plan that is not justified by the economic determinants of D&O insurance. Potential costs to the reputation of the board and a stronger sense to do the right thing are likely to create an incentive for well-functioning boards to insist upon optimal D&O insurance arrangements and to disclose such policies. Accordingly, we predict that:

> H3: Firms with strong internal governance are more likely to disclose D&O insurance.

4. Sample selection

To analyze the determinants of D&O insurance disclosure, we use a sample of US firms. We begin the sample selection by using the Lexis-Nexis search tool to search company filings, including Form 10-K, DEF-14, S-8, and 10-Q, from 2004 to 2008.[4] We identify disclosures related to D&O policy using the key words "D&O," "liability insurance," "directors' insurance," "officers' insurance," "D&O insurance," "directors' liability," "officers' liability," "insurance premium," "D&O coverage," "premium;" "coverage limit," "liability coverage," and "liability premium." The filings compiled from the key word search are then read manually to identify those with valid D&O policy information. This procedure yielded an initial sample of 372 firms with valid Compustat information.

To construct the relevant variables, we merge the sample of 372 firms with Risk Metrics data. Risk Metrics is the primary source for corporate governance variables. To improve sample size, we supplement governance data from Risk Metrics with hand-collected governance data from the proxy statements (Form DEF 14). The hand-collected data include number of shares owned by the CEO, number of outside

Table 1.   Sample selection and industry distribution.

		Firms
Panel A: sample selection		
Test firms		
Test firms with Compustat information		372
Firms after merging with governance data		258
Firms available on risk metric	*31*	
Firms hand collected	*227*	
(*Firms incorporated in New York*)	*(5)*	
Final test firms		253
Control firms		
Control firms with Compustat information		1275
Firms after merging with governance data		1229
Firms incorporated in New York		28
Final control sample		1201

	Test	Control	%
Panel B: Industry distribution of firms disclosing D&O insurance premium and/or coverage information during the period 2004–2008			
Others	32	7	4.5714
Manufacturing	109	641	0.1700
Construction	4	21	0.1905
Mining	16	59	0.2712
Retail	9	128	0.0703
Services	65	224	0.2902
Transportation	15	71	0.2113
Wholesale	3	50	0.0600

Notes: *Premium-only* are firms disclose only premium, *Coverage-only* are firms disclose only coverage, and *Premium and Coverage* are firms disclose both premium and coverage. Reference group is firms disclosing both premium and coverage. LHINDEX takes value 1 if the firm belongs to top quintile of Herfindahl-Hirschman Index, and 0 otherwise; LIT is the aggregate litigation risk; SIZE is the logarithm of total assets; LAWSUIT is 1 if firms had shareholders' lawsuit in the past and 0 otherwise; CEOOWN is the logarithm of proportion of shares held by the CEO to total shares outstanding; OUTDIR is the proportion of outside directors on the board; BOARDSIZE is the number of directors on the board, DUAL is 1 if the CEO is also the chairman; CROSSLIST is 1 if firms are crosslisted on US stock exchange; and INDUSTRY is 1 if a firm is in the industry with high litigation risk based on Francis, Philbrick, and Schipper (1994) analysis, and 0 other wise.

directors, board size, and whether CEO is also chairman. We also drop firms that are registered in New York because all such firms are required by the state law to disclose their D&O insurance programs. Our final sample consists of 253 firms. Table 1, Panel A summarizes the sampling process and data attrition due to missing observations in the various databases from which the final sample is obtained.

Panel B of Table 1 presents the industry distribution of firms that disclose D&O insurance information. The distribution shows that the sample firms are fairly spread over the industries. The manufacturing industry (SIC: 2000 – 3999) has the highest number of firms (109), while the wholesale industry (SIC: 5000 – 5199) has the smallest number of firms (3).

5. Research design

5.1. Variables

Our predictions regarding the determinants of D&O policy disclosure focus on competition, litigation risk, and internal governance. For competition, we argue that firms facing greater competition in the labor market are less likely to disclose their D&O insurance plans for fear of losing key talents to competitors. One difficulty in testing the hypothesis is the lack of good proxy for competition in the labor market. To address this problem, we select a variable that is often used as a proxy for competition in the product market. Since firms' performance is shown to depend highly on the quality of their executives, we assume that competition in the product market is closely related to the demand for talents. Thus, we predict that firms in less (more) competitive markets are more (less) likely to disclose their D&O policies voluntarily. As a proxy for weak competition, we use an indicator variable (LHINDEX) that takes value 1 if the firm belongs to top quintile of Herfindahl-Hirschman Index, and 0 otherwise. We measure the index as the ratio of the sum of squared market shares of the four largest firms in an industry to industry market share. Firms in the top quintile face less competition in their industries, and are expected to be more likely to disclose their D&O insurance practices.

Another factor predicted to influence the disclosure of D&O policy is threat of lawsuit. We use a set of variables drawn from prior studies to construct a proxy for the threat of lawsuit. Drawing from Kim and Skinner (2012), we define a firm's exposure to litigation in terms of the firm's financial performance, financial distress condition, investment opportunities, and reporting quality. We use return on assets (ROA) and Altman (1968) *Z*-score (*Z*-score) as proxies for a firm's financial performance and financial health, respectively. ROA is measured as earnings before interest and tax divided by total assets; *Z*-score is calculated as (3.3 × operating income after depreciation + sale + 1.4 × retained earnings + 1.2 × working capital) ÷ total assets. Proxies for investment opportunities are working capital (WC), market-to-book ratio (MtB), R&D intensity (XRD), and property, plant, and equipment (PPE). WC is the ratio of working capital to total assets; MtB, a ratio of market value of equity to book value of equity; XRD, a ratio of R&D expense to total assets; and PPE is the ratio of property, plant, and equipment to total assets. In addition, we include the ratio of goodwill to total assets (GDWL) in the model to control for the possible effects of merger and acquisition activity on litigation risk.

We also include two factors noted in the literature to affect litigation risk. In particular, we include discretionary accruals (DAAC) measured as the residuals from the modified Jones model (e.g. Krishnan and Krishnan 1997), and leverage (LEV) measured as the ratio of debt to equity (e.g. Kim 2005). The effects of DAAC and LEV on litigation risk are predicted to be positive and negative, respectively.

To incorporate the various dimensions of litigation risk, we convert each proxy discussed above into a 1/0 indicator of high/low litigation risk and sum them to obtain an aggregate measure of a firm's overall litigation risk. In particular, *LIT_ROA* and *LIT_LEV* for a firm-year are set to 1 if ROA and LEV for the firm-year are lower than the industry mean. Similarly, *LIT_Z-Score*, *LIT_WC*, *LIT_MtB*, *LIT_XRD*, *LIT_PPE*, *LIT_GDWL*, and *LIT_DACC* for a firm-year are each set to 1 if *Z*-score, WC, MtB, XRD, PPE, GDWL, and DACC are each greater than their respective industry means, and 0 otherwise. The aggregate measure of litigation risk (LIT) for each firm-year is then measured as

$$LIT = LIT\_ROA + LIT\_Z - Score + LIT\_WC + LIT\_MtB + LIT\_XRD + LIT\_PPE \\ + LIT\_GDWL + LIT\_DACC + LIT\_LEV.$$

In addition, firms with high ability to pay damages (*deep pockets*) are also predicted to face higher litigation risk.[5] As in prior studies, we use firm size (SIZE) measured as a logarithm of total assets as a proxy for a firm's ability to pay. We also include another proxy for litigation risk, LAWSUIT, which takes a value of 1 if a firm has previous shareholder lawsuit and 0 otherwise. LAWSUIT controls for the possibility that firms with a history of shareholder lawsuits will elect disclosure strategies intended to reduce expected costs of lawsuits (Francis, Philbrick, and Schipper 1994; Field, Lowry, and Shu 2005). We further control for industry exposure to lawsuits based on evidence by Francis, Philbrick, and Schipper (1994). The proxy, INDUSTRY, is set to 1 if a firm is in one of the following industries (SIC codes) with high incidence of litigation: bio-technology (2833–2836 and 8731–8734), computers (3570–3577 and 7370–7374), electronics (3600–3674), and retailing (5200–5961), and 0 otherwise.

The third factor in our hypotheses is internal governance. The literature is replete with evidence linking governance structures to voluntary disclosure practices (Healy and Palepu 2001). For our analysis, we focus on governance factors that are likely to affect the incentive/opportunity to disclose or conceal the D&O policy. In particular, we focus on the presence of outside directors, CEO ownership, CEO's dual role as board chairman, and board size. Outside directors are viewed to be effective monitors of managerial behavior. Akhtaruddin et al. (2009), Beaulieu, Ding, and Qu (2012), and Forker (1992) argue that firms are more transparent when more outside directors are on the board. Thus, we expect the proportion of outside directors (OUTDIR) to have a positive impact on the likelihood of disclosure of D&O policy.

The principal agent models posit that CEOs' equity ownership aligns CEOs' interests closely with owners' and creates incentive for CEOs to favor governance process that reduces risk of investment losses and information asymmetry between the firm and outsiders (Jensen and Meckling 1976; Morck, Shleifer, and Vishny 1988; Stulz 1988). In the sense of the theory, we expect CEOs with equity ownership to be more transparent with their firms' employment practices including D&O policies. Thus, we expect CEO ownership to have a positive effect on the likelihood of disclosing D&O policy. CEO ownership (CEOOWN) is the logarithm of the proportion of a firm's outstanding stocks held by the CEO. Agency models also predict that a CEO who is also board chairman wields the kind of influence that reduces the board's ability to monitor and influence the firm's pay practices and disclosure strategy (Gul and Leung 2001). Thus, we expect the presence of such a dual role to have a negative effect on the likelihood of disclosure. Our proxy for such influence, DUAL, takes a value of 1 if the CEO is also chairman of the board, and 0 otherwise. The literature further suggests a positive association between board size and corporate transparency (Chen and Jaggi 2000; Akhtaruddin et al. 2009). Thus, we expect board size to have a positive effect on the likelihood of D&O policy disclosure. Board size, BOARDSIZE, is measured as number of directors on the board.

We also control for other factors that can impact a firm's decision to disclose its D&O policy. Prior studies document a positive association between disclosure decisions and analyst following (Lang and Lundholm 1993; Francis, Hanna, and Philbrick 1998). Following these studies, we control for analyst coverage, ANALYSTS, calculated as number of analysts' following. Firms incorporated in Canada or UK are required by their home countries to disclose their D&O policies (see, Core 1997; O'Sullivan 1997,

2002; Boyer 2005); firms from such countries that are cross-listed in the US may continue with the disclosure of D&O in the US To address the potential confounding effect, we present results in which we explicitly control for the effect of cross-listing using an indicator, CROSSLIST, that takes a value of 1 for firms cross-listed in the US, and 0 otherwise. As an alternative, we also present results of analysis from which we exclude firms that are cross-listed in the US.[6]

5.2. Model

For the test, we combine the 253 firms that disclose their D&O insurance with a control sample of 1201 firms that do not d D&O insurance.[7] Next, we specify a logit model in which the dependent variable, *Disclose*, takes value 1 for firms that disclose D&O insurance, and 0 otherwise. The model is given as:

$$
\begin{aligned}
Logit\ (Disclose = 1) \\
= \gamma_0 + \gamma_1 LHINDEX\ + \gamma_2 LIT\ + \gamma_3 SIZE\ + \gamma_4 LAWSUIT \\
+ \gamma_5 CEOOWN + \gamma_6 OUTDIR\ + \gamma_7 BOARDSIZE\ + \gamma_8 DUAL \\
+ \gamma_9 ANALYSTS + \gamma_{10} CROSSLIST\ + \gamma_{11} INUDSTRY\ + \varepsilon \quad (1)
\end{aligned}
$$

The variables in the model are as defined previously (see, also, Table 2). To the extent that firms in less competitive markets are more likely to disclose their D&O policies, γ_1 will be positive. The coefficients, γ_5, γ_6, and γ_7 are also expected to be positive on the argument that CEOOWN, OUTDIR, and BOARDSIZE, respectively, are associated with greater corporate transparency. By contrast, we expect γ_8 to be negative on the premise that CEO duality is related to the incentive for opacity. We also expect γ_2 and γ_3 to be negative on the premise that firms with high litigation risk (arising from operational characteristics and size) are more likely to conceal their D&O policy to reduce the probability of lawsuits. The sign of γ_4 or γ_{11} will depend on the extent to which lawsuit or industry membership loads on the firms' desire to disclose the D&O policy (see, Francis, Philbrick, and Schipper 1994; Baginski, Hassell, and Kimbrough 2002). γ_9 and γ_{10} capture the effects of analysts' following and cross-listing, respectively, on the disclosure model.

6.   Results

6.1. General determinant of D&O insurance disclosure

Table 3 presents the descriptive statistics of the key variables used in analysis. The statistics for the full sample, test firms, and control firms are in Panel A. In Panel B, we present tests of difference in means and medians of the variables between the test and control firms. The results in Panel A show that about 24% of the test firms are in less competitive markets vs. 22% of the control firms. The difference of 2.29% in means (Panel B) is insignificant, however. The test and the control firms differ significantly in our three proxies for litigation risk – LIT, SIZE, and INDUSTRY (see, Panel B). The test firms have lower mean LIT (5.40 vs. 5.80) and smaller mean size (5.84 vs. 7.62), but are concentrated more in industries prone to litigation (35% vs. 23%). The median SIZE and INDUSTRY of test firms and control firms also differ significantly. For the proxies for governance – CEOOWN, OUTDIR, BOARDSIZE, and DUAL – the test firms have greater mean CEO ownership, higher mean proportion of outside directors, but smaller mean board size; a smaller percentage of CEOs also serves as chairman

among the test firms (49% vs. 51%), although the difference is insignificant (Panel B). The tests firms are also more cross-listed, but have fewer analysts' following. We also find that the median values of CEOOWN, OUTDIR, BOARDSIZE, CROSSLIST, and ANALYST for test firms are significantly different from those of the control firms'.

Next, we present pair-wise correlations among the variables in Table 4. *Disclose* and LHINDEX are positively correlated, but the coefficient is rather small (corr. = 0.008). *Disclose* is negatively correlated with LIT (corr. = −0.028, $p < 0.06$) and SIZE (corr. = −0.208, $p < 0.0001$) but positively correlated with LAWSUIT (corr. = 0.019, $p < 0.18$) and INDUSTRY (corr. = 0.029, $p < 0.05$), respectively; these latter results suggest that higher litigation risk (instrumented by LIT and SIZE) reduces the disclosure of

Table 2. Variable description (*WRDS* and *Risk Metrics* mnemonics are in parentheses).

Variable	Description
ANALYSTS	# of analyst following for each firm
BOARDSIZE	# of directors on the board
CEOOWN	Logarithm of the ratio of # of shares held by CEO (Num_of_shares) to total shares outstanding (CSHO)
CROSSLIST	1 if a firm is crosslisted on the US stock exchange, and 0 otherwise
Disclose	1 if a firm disclose D&O premium and/or coverage information, and 0 otherwise
DUAL	1 if the CEO is also chairman of the board, and 0 otherwise
INDUSTRY	1 if a firm is in the industry with high litigation risk based on Francis, Philbrick, and Schipper (1994) analysis, and 0 other wise
LAWSUIT	1 if a firm had shareholders' lawsuit in the past and 0 otherwise. Data for shareholder lawsuits are available at the Stanford Law School Securities Class Action Clearinghouse
LHINDEX	1 if a firm belongs to an industry in the top quintile of Herfindahl-Hirschman Index (at the four-digit SIC code) measured as the sum of the squared market shares (firm SALE ÷ Industry SALE) of the largest four firms in the industry, and 0 otherwise
LIT	Aggregate measure of firm's litigation risk calculated as $LIT\_ROA + LIT\_Z\text{-}Score + LIT\_WC + LIT\_MtB + LIT\_XRD + LIT\_PPE + LIT\_GDWL + LIT\_DACC + LIT\_LEV$
LIT_DACC	1 if a firm's discretionary accruals based on the modified Jones model are greater than the industry mean, and 0 otherwise
LIT_GDWL	1 if a firm's merger and acquisition activity defined as Goodwill (GDWL) scaled by total assets (AT) is greater than the industry mean, and 0 otherwise
LIT_LEV	1 if a firm's leverage (DLTT ÷ SEQ) is lower than the industry mean; else, it is 0
LIT_MtB	1 if a firm's market-to-book ratio (PRCC_F*CSHO ÷ CEQ) is greater than the industry mean, and 0 otherwise
LIT_PPE	1 if a firm's property, plant and equipment (PPENT) scaled by total assets is greater than the industry mean, and 0 otherwise
LIT_ROA	1 if a firm's return on assets (EBIT ÷ AT) is lower than the industry mean, and 0 otherwise
LIT_WC	1 if a firm's working capital ((ACT − LCT) ÷ AT) is greater than the industry mean, and 0 otherwise
LIT_XRD	1 if a firm's R&D ratio (XRD ÷ AT) is greater than the industry mean, and 0 otherwise
LIT_Z-Score	1 if a firm's Altman (1968) Z-score is greater than the industry mean
OUTDIR	Ratio of outside director to total directors on the board
Qual	1 if the D&O insurance information disclosed is qualitative and 0 otherwise
SIZE	Natural logarithm of total assets (AT)

D&O policy, whereas lawsuit and membership in industries prone to litigation have a positive effect on the disclosure of D&O policy.

　　Disclose is positively correlated with CEOOWN (corr. = 0.045, $p < 0.002$) and OUTDIR (corr. = 0.032, $p < 0.03$), but negatively correlated with BOARDSIZE (corr. = −0.040, $p < 0.005$) and DUAL (corr. = −0.003, $p < 0.85$). These results suggest that stronger corporate boards play a more positive role in the disclosure of D&O policy. As in prior studies, cross-listing is positively correlated with *Disclose*. Analysts' following, on the other hand, has a negative influence on *Disclose*. In general, the results in Table 4 provide broad support for the notion that competition, threat of lawsuit, and internal governance affect the disclosure of D&O policy.

6.2.　*Multivariate analysis*

In Table 5, Panel A, we present the main tests based on the results of the logit model. The first three columns contain results with explicit control for the effect of cross-listing. Results in the next three columns are based on the sample from which the cross-listed firms are excluded from analysis. Except for the effect of CROSSLIST shown only for the full sample, the results in both samples are remarkably similar. For instance, in both samples, the effect of LHINDEX on *Disclose* is positive and significant. The result supports H1 that firms in less competitive markets are more likely to disclose their D&O policy voluntarily. *Disclose* is negatively associated with LIT (coeff. = −0.061) and SIZE (coeff. = −1.073; $p < 0.0001$), in line with H2 that threat of lawsuit and ability to pay damages reduce a firm's inclination to voluntarily disclose its D&O policy. By contrast, LAWSUIT loads positively on the likelihood model. One view of this result is that firms that have been sued previously are more inclined to disclose their D&O policy to preempt future litigation (e.g. Field, Lowry, and Shu 2005).

　　For the governance variables, CEOOWN and DUAL have no effect on *Disclose*. However, the effects of OUTDIR and BOARDSIZE on *Disclose* are reliably positive. These results provide support for H3 that firms with strong internal governance are more likely to disclose their D&O policies voluntarily. The effect of CROSSLIST is positive and significant as predicted. The marginal effects of the variables evaluated at the mean are also shown for both samples. CROSSLIST has the highest marginal effect of 0.09 in the full sample, which indicates a 9% increase in the probability that a firm cross-listed in the US will disclose its D&O policy. Of the remaining variables, OUTDIR has the highest marginal effect on plan disclosure with marginal probabilities of 7.75 and 7.42% in the full sample and sample without cross-listed firms, respectively. An increase in the proportion outside directors thus has the largest positive effect on the probability that the firm will disclose its D&O insurance plan. In both samples, the marginal effect of size is also substantive but negative, as expected. The marginal effect of each of the remaining factor is about 1% or less.[8] Overall, the results suggest that firms in more competitive markets and with greater threat of lawsuit are less likely to disclose their D&O plans; by contrast, firms with strong internal governance are more likely to disclose such plans.

　　The preceding analysis excludes 114 disclosing firms for which we were unable to gather the relevant governance data. To include those firms in analysis, we drop the requirement of governance variables for the firms and repeat the logit analysis with 372 test firms and 1275 control firms. The results based on this latter sample (not separately tabulated) do not alter the inferences about the effects of competition and litigation risk on *Disclose*: the coefficient for LHINDEX is 0.220 ($p < 0.036$), similar to the results

Table 3.   Descriptive Statistic for the determinants of disclosure of D&O insurance.

	All firms (1454 firms)		Test firms (253 firms)		Control firms (1201 firms)	
Variable	Mean	Median	Mean	Median	Mean	Median
Panel A: Descriptive statistics						
LHINDEX	0.2159	0.0000	0.2390	0.0000	0.2151	0.0000
LIT	5.7885	6.0000	5.4025	6.0000	5.8011	6.0000
SIZE	7.5636	7.4439	5.8403	5.7826	7.6199	7.4797
LAWSUIT	0.2206	0.0000	0.2645	0.0000	0.2192	0.0000
CEOOWN	0.0336	0.0108	0.0598	0.0270	0.0323	0.0104
OUTDIR	0.7235	0.7500	0.7483	0.7692	0.7227	0.7500
BOARDSIZE	9.0316	9.0000	8.6730	8.0000	9.0433	9.0000
DUAL	0.5140	1.0000	0.4906	0.0000	0.5148	1.0000
ANALYSTS	16.7160	14.0000	10.145	7.0000	16.9310	14.0000
CROSSLIST	0.0087	0.0000	0.1447	0.0000	0.0043	0.0000
INDUSTRY	0.2314	0.0000	0.3459	0.0000	0.2276	0.0000

	Mean difference		Median difference	
	Test firm − Control firm	p-Value	Test firm − Control firm	p-Value
Panel B: Test of difference between test and control samples				
LHINDEX	0.0239	0.4713	0.0000	0.5785
LIT	−0.3986	0.0057	0.0000	0.2097
SIZE	−1.7795	0.0001	−1.6886	0.0001
LAWSUIT	0.0453	0.1806	0.0000	0.1806
CEOOWN	0.0274	0.0001	0.0069	0.0044
OUTDIR	0.0256	0.0248	0.0278	0.0306
BOARDSIZE	−0.3704	0.0331	−1.0000	0.0092
DUAL	−0.0242	0.5479	0.0000	0.8511
ANALYSTS	−6.7860	0.0001	−7.0000	0.0001
CROSSLIST	0.1403	0.0001	0.0000	0.0001
INDUSTRY	0.1183	0.0005	0.0000	0.0416

Notes: The test firms include firms that provide disclosure of D&O insurance premium and/or coverage for the period 2004 to 2008. The Control firms include firms that did not provide disclosure of D&O insurance premium and/or coverage during the period 2004–2008. The p-values for the test of difference in the means are based on two-tailed t-test. LHINDEX takes value 1 if the firm belongs to top quintile of Herfindahl-Hirschman Index, and 0 otherwise; LIT is the aggregate litigation risk; SIZE is the logarithm of total assets; LAWSUIT is 1 if firms had shareholders' lawsuit in the past and 0 otherwise; CEOOWN is the proportion of shares held by the CEO to total shares outstanding; OUTDIR is the proportion of outside directors on the board; BOARDSIZE is the number of directors on the board, DUAL is 1 if the CEO is also the chairman; ANALYSTS is the number of analyst following for the firm; CROSSLIST is 1 if firms are crosslisted on US stock exchange; and INDUSTRY is 1 if a firm is in the industry with high litigation risk based on Francis, Philbrick, and Schipper (1994) analysis, and 0 other wise.

reported in Table 5; and the coefficients for LIT and SIZE are −0.080 ($p < 0.0013$) and −0.506 ($p < 0.0001$). Thus, litigation risk remains negatively associated with the likelihood of D&O policy disclosure. The results for LAWSUIT, INDUSTRY, and CROSSLIST remain qualitatively similar to those shown in Table 5.

6.3.   The scope of disclosure

Our analysis thus far has focused on the disclosure of D&O policy in general. However, the disclosing firms differ in the types and scope of disclosures. Specifically, the

Table 4. Correlation matrix of determinants of disclosure of D&O insurance.

	LHINDEX	LIT	SIZE	LAWSUIT	CEOOWN	OUTDIR	BOARDSIZE	DUAL	ANALYSTS	CROSSLIST	INDUSTRY
Disclose	0.0080 (0.5785)	-0.0276 (0.0540)	-0.2076 (0.0001)	0.0192 (0.1806)	0.0454 (0.0017)	0.0320 (0.0255)	-0.0401 (0.0050)	-0.0027 (0.8511)	-0.0324 (0.0235)	0.2671 (0.0001)	0.0292 (0.0416)
LHINDEX	1	-0.0522 (0.0003)	0.0824 (0.0001)	-0.0783 (0.0001)	0.0041 (0.7758)	0.0512 (0.0003)	0.1118 (0.0001)	0.0442 (0.0020)	0.0774 (0.0001)	-0.0309 (0.0306)	-0.1541 (0.0001)
LIT		1	-0.0056 (0.6934)	0.0009 (0.9487)	-0.0120 (0.4040)	0.0358 (0.0124)	-0.0266 (0.0627)	-0.0106 (0.4595)	-0.0407 (0.0044)	0.0115 (0.4200)	0.0242 (0.0902)
SIZE			1	0.1140 (0.0001)	-0.3933 (0.0001)	0.1258 (0.0001)	0.5624 (0.0001)	0.0828 (0.0001)	0.0550 (0.0001)	-0.0768 (0.0001)	-0.0941 (0.0001)
LAWSUIT				1	-0.0626 (0.0001)	0.0503 (0.0004)	0.0307 (0.0319)	-0.0173 (0.2279)	0.0109 (0.4482)	0.0015 (0.9150)	0.1656 (0.0001)
CEOOWN					1	-0.0484 (0.0008)	-0.2879 (0.0001)	0.2981 (0.0001)	0.0298 (0.0388)	0.0152 (0.2920)	0.0340 (0.0184)
OUTDIR						1	0.0803 (0.0001)	0.1674 (0.0001)	0.1990 (0.0001)	-0.0233 (0.1037)	0.0036 (0.8018)
BOARDSIZE							1	-0.0151 (0.2899)	0.0110 (0.4433)	-0.0371 (0.0095)	-0.1671 (0.0001)
DUAL								1	-0.0564 (0.0001)	-0.0107 (0.4547)	-0.0384 (0.0073)
ANALYSTS									1	-0.0408 (0.0043)	0.0728 (0.0001)
CROSSLIST										1	0.0080 (0.5786)
INDUSTRY											1

Notes: Two tailed *p*-values are reported in the parenthesis. The correlation is the Pearson Correlation. *Disclose* is 1 if firm disclosed D&O insurance premium, coverage, or both. LHINDEX takes value 1 if the firm belongs to top quintile of Herfindahl-Hirschman Index, and 0 otherwise; LIT is the aggregate litigation risk; SIZE is the logarithm of total assets; LAWSUIT is 1 if firms had shareholders' lawsuit in the past and 0 otherwise; CEOOWN is the proportion of shares held by the CEO to total shares outstanding; OUTDIR is the proportion of outside directors on the board; BOARDSIZE is the number of directors on the board, DUAL is 1 if the CEO is also the chairman; ANALYSTS is the number of analyst following for the firm; CROSSLIST is 1 if firms are crosslisted on US stock exchange; and INDUSTRY is 1 if a firm is in the industry with high litigation risk based on Francis, Philbrick, and Schipper (1994) analysis, and 0 other wise.

Table 5. Logit analysis of the determinant of disclosure of D&O insurance.

Logit (*Disclose* = 1) = γ_0 + γ_1LHINDEX + γ_2LIT + γ_3SIZE + γ_4 LAWSUIT + γ_5CEOOWN + γ_6OUTDIR + γ_7BOARDSIZE + γ_8DUAL+ γ_9ANALYSTS + γ_{10}CROSSLIST + γ_{11}INDUSTRY + ε

| | All firms | | | Without cross-listed firms | | |
Variable	Coeff.	$Pr > \chi^2$	Marginal effect	Coeff.	$Pr > \chi^2$	Marginal effect
Panel A: The logit model is run on 1454 firms which include 253 firms as test firms that disclose D&O insurance premium and/or coverage information and 1201 firms as control firms that did not disclose D&O insurance premium and/or coverage information during 2004–2008						
Intercept	−0.9418	0.2944	na	−1.0600	0.2493	na
LHINDEX	0.3782	0.0969	0.0088	0.4737	0.0378	0.0204
LIT	−0.0612	0.2704	−0.0023	−0.0862	0.1290	−0.0036
SIZE	−1.0725	0.0001	−0.0225	−1.0947	0.0001	−0.0377
LAWSUIT	0.2121	0.3605	0.0085	0.3284	0.1548	0.0058
CEOOWN	−0.0632	0.3905	−0.0018	−0.1018	0.1640	−0.0019
OUTDIR	3.1394	0.0001	0.0775	3.2714	0.0001	0.0742
BOARDSIZE	0.2631	0.0001	0.0059	0.2810	0.0001	0.0071
DUAL	0.1372	0.5155	0.0039	0.2463	0.2513	0.0060
ANALYSTS	−0.0383	0.5568	−0.0010	−0.0585	0.3794	−0.0075
CROSSLIST	3.4965	0.0001	0.0904			
INDUSTRY	0.1063	0.6167	0.0014	0.1225	0.5706	0.0008

χ^2 = 414.7152 (*p*-value = <0.0001)

Notes: *Disclose* is 1 if firm disclosed D&O insurance premium, coverage, or both. LHINDEX takes value 1 if the firm belongs to top quintile of Herfindahl-Hirschman Index, and 0 otherwise; LIT is the aggregate litigation risk; SIZE is the logarithm of total assets; LAWSUIT is 1 if firms had shareholders' lawsuit in the past and 0 otherwise; CEOOWN is the logarithm of proportion of shares held by the CEO to total shares outstanding; OUT-DIR is the proportion of outside directors on the board; BOARDSIZE is the number of directors on the board, DUAL is 1 if the CEO is also the chairman; ANALYSTS is the number of analyst following for the firm; CROSSLIST is 1 if firms are crosslisted on US stock exchange; and INDUSTRY is 1 if a firm is in the industry with high litigation risk based on Francis, Philbrick, and Schipper (1994) analysis, and 0 other wise.

test firms comprise firms that provide only premium information, those that provide only coverage information, and a third group that disclose both premium and coverage information. In this section, we test whether these three groups of firms differ across the major factors that determine disclosure–competition, threat of lawsuit, and internal governance. The analysis is exploratory in that we have no priors about the possible incentives for firms to provide partial or full disclosure of their D&O plans. In this sense, our goal is to ascertain whether variations in the scope of disclosure reflect fundamental clusters across the determinants of disclosure.

For the analysis, we group the test sample into firms disclosing only premium, only coverage, and both premium and coverage. The grouping yields 61 premium-only firms, 170 coverage-only firms, and 22 premium-coverage firms. Notably, a majority of the firms (170 or 67%) provides only coverage disclosure; just a handful of the firms (9%) disclose premium and coverage. In Table 6 Panel A, we present the mean and median values of the test variables for premium-only, coverage-only, and premium-coverage firms. Next, we perform *F*-tests (not separately shown) using simple ANOVA to evaluate the equality of the variables across the sub-groups.[9]

The mean (median) LHINDEX is 0.577 (1.000) for premium-only firms, 0.197 (0.000) for coverage-only firms, and 0.259 (0.000) for firms disclosing both premium

and coverage. Mean (median) LIT across the three groups is respectively 5.047 (5.000), 5.557 (6.000), and 4.593 (5.000). The ANOVA results show that the F-value of difference in means for HINDEX is 0.287 and is highly significant ($p < 0.0001$). We also find that LIT differs reliably across the groups (F-value = 5.389; $p < 0.0015$). The F-tests also show that SIZE, LAWSUIT, and INDUSTRY differ significantly across the three groups. Furthermore, the means of the remaining variables (CEOOWN, OUTDIR, BOARDSIZE, DUAL, CROSSLIST, INDUSTRY) also differ significantly across the sub-groups. Altogether, these initial tests indicate that the three groups differ reliably in the factors predicted to affect the disclosure of D&O policy.[10]

For a more robust analysis of why the scope of disclosure varies across firms, we perform a multinomial logit analysis. For the analysis, we order the three groups respectively as *premium-only*, *coverage-only*, and *premium-coverage* groups. We then use the *premium-coverage* group as a reference group to gain better insights into the factors that characterize firms that provide only partial disclosures. In this regard, the coefficient on a given factor for the *premium-only* or for the *coverage-only* group reflects the odds that a firm will disclose premium only or coverage only compared to premium plus coverage for every unit increase/decrease in the factor. We present the multinomial results in Panel B of Table 6.

The first three columns are the results for the full sample. The premium-only disclosure is chiefly attributable to OUTDIR, CROSSLIST, and LAWSUIT, with coefficients of −6.646 ($p < 0.05$), −3.180 ($p < 0.0004$), and −1.928 ($p < 0.09$), respectively. That is, firms that have lower proportion of outside directors, are not cross-listed, and/or have not been sued previously are more likely to disclose only the premium aspect of their D&O policy; stated differently, firms with higher proportion of outside directors, are cross-listed, and/or have been sued previously are less likely to provide only premium disclosure. Their marginal effects are −0.5617 for OUTDIR, −0.2706 for CROSSLIST, and −0.1040 for LAWSUIT. In other words, given that a firm is providing information about its D&O policy, the odds of disclosing only premium information increases by 56.17, 27.06, and 10.40% if the firm has lower proportion of outside directors, is not cross-listed, and has not been sued previously.

For coverage-only group, disclosure is mainly affected by litigation risk (LIT), CEO duality (DUAL), and cross-listing (CROSSLIST); the respective coefficients are 0.365 ($p < 0.03$), 1.656 ($p < 0.05$), and −3.199 ($p < 0.0001$). The results indicate that firms that have higher threats of lawsuit and/or have CEOs who also serve as board chairman are more likely to withhold premium information and disclose only coverage part of their policies. By contrast, being cross-listed reduces the odds that a firm will provide only coverage disclosure. Strikingly, competition appears to have little effect on the choice of disclosure scope. Rather, the likelihood of making partial disclosures of the D&O policy is chiefly attributable to litigation risk, internal governance, and cross-listing. The marginal effect of LIT, DUAL, and CROSSLIST are, respectively, −0.72, 0.78, and 15.12%. The marginal effect of CROSSLIST is notable as it indicates that the odds of providing only coverage information increases by 15.12% for Canadian and UK firms that cross-list in the US.

Results for firms incorporated in the US are shown in the next three columns. For these firms, premium-only disclosure is driven primarily by litigation risk (LIT), firm size (SIZE), and proportion of outside directors (OUTDIR). The respective marginal effects are 0.0135, 0.0292, and −0. 8111. The results again point to the overwhelming impact of outside directors on the scope of disclosure, indicating that the odds of disclosing only premium declines by 81% with an increase in the proportion of outside

Table 6.   Additional tests of determinants of partial disclosures of D&O insurance policies.

Variable	Premium only		Coverage only		Premium and coverage	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Descriptive statistics						
LHINDEX	0.5814	1.0000	0.1985	0.0000	0.2333	0.0000
LIT	5.0581	5.0000	5.6292	6.0000	4.8000	5.0000
SIZE	3.4260	4.2360	4.4890	4.1882	4.1916	4.3522
LAWSUIT	0.0349	0.0000	0.1386	0.0000	0.1333	0.0000
CEOOWN	0.0756	0.0420	0.0613	0.0281	0.0216	0.0109
OUTDIR	0.5231	0.5192	0.7038	0.7143	0.7165	0.7143
BOARDSIZE	6.1977	6.0000	7.7444	8.0000	7.0000	7.0000
DUAL	0.6279	1.0000	0.4719	0.0000	0.3333	0.0000
CROSSLIST	0.0814	0.0000	0.1311	0.0000	0.6667	1.0000
INDUSTRY	0.1744	0.0000	0.4607	0.0000	0.3667	0.0000

	All firms			Without cross-listed firms		
	Coeff.	$Pr > \chi^2$	Marginal effect	Coeff.	$Pr > \chi^2$	Marginal effect
Panel B: Multinomial logit analysis of the determinants of partial disclosures of D&O policies for US listed firms (Total firms = 253)						
Intercept$_{premium-only}$	3.1647	0.2571	na	8.1252	0.1245	na
LHINDEX$_{premium-only}$	1.2345	0.2356	0.1519	0.5269	0.7370	0.1543
LIT$_{premium-only}$	0.2249	0.2775	0.0130	0.5454	0.0909	0.0135
SIZE$_{premium-only}$	0.1997	0.4881	0.0154	0.7331	0.0990	0.0292
LAWSUIT$_{premium-only}$	−1.9283	0.0936	−0.1040	−2.3668	0.1916	−0.1167
CEOOWN$_{premium-only}$	−0.0002	0.9994	0.0125	−0.1587	0.7386	0.0031
OUTDIR$_{premium-only}$	−6.6462	0.0416	−0.5617	−14.5414	0.0216	−0.8111
BOARDSIZE$_{premium-only}$	0.0532	0.8292	−0.0045	−0.3239	0.3666	−0.0113
DUAL$_{premium-only}$	0.8452	0.3549	−0.0140	0.7568	0.5667	−0.0241
CROSSLIST$_{premium-only}$	−3.1797	0.0004	−0.2706			
INDUSTRY$_{premium-only}$	0.5389	0.5734	0.0197	−0.1239	0.9392	0.0333
Intercept$_{coverage-only}$	0.1014	0.9687	na	5.2958	0.3061	na
LHINDEX$_{coverage-only}$	−1.3029	0.1561	−0.0686	−1.7433	0.2340	−0.1102
LIT$_{coverage-only}$	0.3652	0.0291	−0.0072	0.6523	0.0279	−0.0101
SIZE$_{coverage-only}$	−0.018	0.9428	−0.0086	0.5594	0.1775	−0.0218
LAWSUIT$_{coverage-only}$	−1.157	0.1629	0.0581	−0.6218	0.6640	0.0872
CEOOWN$_{coverage-only}$	−0.0834	0.7623	−0.0070	−0.1915	0.6776	−0.0024
OUTDIR$_{coverage-only}$	−0.4644	0.8747	0.3139	−8.6153	0.1600	0.6062
BOARDSIZE$_{coverage-only}$	0.2468	0.2611	0.0025	−0.1517	0.6519	0.0084
DUAL$_{coverage-only}$	1.6558	0.0457	0.0078	1.5696	0.2086	0.0180
CROSSLIST$_{coverage-only}$	−3.1992	0.0001	0.1512			
INDUSTRY$_{coverage-only}$	−0.3971	0.5891	−0.0110	−0.9274	0.5340	−0.0249

$\chi^2 = 41.3032$ (p-value = 0.0014)

Notes: LHINDEX takes value 1 if the firm belongs to top quintile of Herfindahl-Hirschman Index, and 0 otherwise; LIT is the aggregate litigation risk; SIZE is the logarithm of total assets; LAWSUIT is 1 if firms had shareholders' lawsuit in the past and 0 otherwise; CEOOWN is the logarithm of proportion of shares held by the CEO to total shares outstanding; OUTDIR is the proportion of outside directors on the board; BOARDSIZE is the number of directors on the board, DUAL is 1 if the CEO is also the chairman; ANALYSTS is the number of analyst following for the firm; CROSSLIST is 1 if firms are crosslisted on US stock exchange; and INDUSTRY is 1 if a firm is in the industry with high litigation risk based on Francis, Philbrick, and Schipper (1994) analysis, and 0 other wise.

directors. The results for coverage-only firms are notable: Coverage-only disclosure is chiefly attributable to litigation risk (LIT). The marginal effect is 1.01%. In other words, barring litigation risk, coverage only firms have characteristics that are similar to those of firms disclosing both premium and coverage information.

6.4. *Additional tests*

For additional tests, we sort the test firms into two groups based on the nature of plan disclosure. The first group includes firms that provide only qualitative discussions of their D&O policy and the second group comprises firms that provide quantitative disclosures of their D&O policy. Notably, qualitative disclosures are viewed as less precise and more difficult to interpret relative to quantitative disclosures (Baginski, Conrad, and Hassell 1993).This raises questions about factors that create incentives for qualitative vs. quantitative disclosures of the D&O policy. For insight into the question, we re-estimate the logit model, with *Qual* set to 1 for firm-year disclosures of D&O policy that are completely qualitative, and 0 otherwise.

Focusing on the significant coefficients, larger firms (SIZE) and firms with higher CEO ownership (CEOOWN) are less likely to provide only qualitative disclosures of their policies. Noting that size is closely linked to lawsuits, large firms may be inclined to provide more precise disclosures of their D&O policies to preempt or reduce lawsuits (Francis, Philbrick, and Schipper 1994). Similarly, CEOs with more wealth in the firm may have an incentive to be more transparent given the expanded legal liability imposed on them under the Sarbanes Oxley Act of 2002 for withholding or information or providing misleading information to shareholders. This view is tempered, however, by the positive effect of litigation risk (LIT) on the likelihood function. In other words, firms at greater risk of performance decline (measured by LIT) are more inclined to provide only qualitative information about their D&O policies. We note, however, that LIT, as measure of a firm's risk of poor performance, is more diffuse than SIZE in its influence on shareholder lawsuits. On this point, Francis, Philbrick, and Schipper (1994) observe that declines in performance by themselves do not trigger shareholder lawsuits; the lawsuits appear to reflect other conditions that precede the decline. In this sense, firms with higher LIT may feel limited pressure to provide precise disclosures of their D&O policy. OUTDIR also has a positive effect on the likelihood function.

7. Conclusion

Although D&O insurance is used extensively in top management compensation, very few firms disclose information regarding the nature and size of their D&O insurance coverage. Even among firms that disclose the information, a wide disparity exists in the amount of information disclosed. What is not immediately obvious is the reason why only a small number of firms voluntarily disclosure the policies, despite the fact that nearly 100% US registered firms have D&O policies. Drawing from the voluntary disclosure literature, we examine the extent to which the factors predicted to determine voluntary disclosures are associated with the disclosure of D&O policy. In particular, we examine whether competition for directors, threat of lawsuits, and internal governance have an influence on the disclosure of D&O policies.

Using a sample of firms that disclosed such insurance policies as test firms, and a control sample of firms that did not disclose such information we find that the test

firms faced lower competition, had lower threat of lawsuit, and possessed stronger internal governance. In a further test, we find that lower proportion of outside directors and/or having not been sued previously raises the likelihood that a firm will limit disclosure to premium only; whereas higher risk of being sued and/or CEO duality increases the likelihood that a firm will limit disclosure to coverage only. Interestingly, we also find that firms with higher litigation risk and greater proportion of outside directors are more inclined to provide only qualitative disclosures of their policies, whereas larger firms and firms with higher CEO ownership are less likely to provide only qualitative disclosures of their D&O policies. Overall, the results suggest several reasons why a broader segment of US listed firms withholds information about their D&O policies.

Notes

1. Other studies document higher restatements (Kim 2005), greater earnings management during seasoned equity offering (Boubakri, Boyer, and Ghalleb 2008), and lower timeliness of earnings (Chung and Wynn 2008).
2. A point can also be made that, in competitive markets, even firms that offer attractiveness employment packages will be reluctant to provide details of their compensation structure for fear of engineering costly compensation race.
3. Skinner (1994) suggests that firms voluntarily disclose bad news to preempt lawsuits or reduce the expected cost of lawsuits. There is also a view that the threshold for legal action is relatively low for firms with a history of mismanagement or lawsuits; such firms may preempt future lawsuits with voluntary disclosures (Field, Lowry, and Shu 2005). Francis, Philbrick, and Schipper (1994), however, find little evidence that firms follow such disclosure habits. To the contrary, Francis, Philbrick, and Schipper (1994) show that warning disclosures can trigger lawsuits.
4. We begin data collection in 2004 to avoid any discontinuities in disclosure that may stem from the Sarbanes Oxley Act of 2002.
5. The Wyatt (1997) Report states that the chance of having a claim made against directors or officers of large companies is 63% while the chance of having a claim made against directors or officers of small companies is 12%.
6. The full sample has 50 cross-listed firms, with 39 and 11 of the firms in the test and control samples, respectively.
7. Drawing from Towers Perrin (2004), we assume that all control firms have D&O policy but chose not to disclose it.
8. As an alternative to including separate governance variables in the model, we identified firms in the sample for which the Gompers governance index, GINDEX, is available on Risk Metric. Only 20 firms in sample of test firms have valid GINDEX. We then replace the governance variable with GINDEX and re-run the logit model. Based on the revised sample, the coefficient on GINDEX is positive in line with our prediction, but insignificant.
9. The ANALYSTS variable is dropped from this analysis because analysts' following is missing for most firms that provide both coverage and premium information.
10. Untabulated pairwise tests of difference in means/medians among the three groups show that premium-only firms differ more significantly from the rest of the disclosing firms. In particular, premium-only firms operate in markets that are more concentrated (LHINDEX) and have greater number of CEOs with dual roles (DUAL), compared to either coverage-only or coverage-premium firms. At the other end, they have higher litigation risk, smaller board size, more CEOs with lower equity ownership, and are smaller in size compared to other disclosing firms. The premium-only firms thus appear to have greater governance problems than the other disclosing firms. Coverage-only and coverage-premium firms differ more substantively with respect to litigation risk and board size: Firms disclosing both coverage and premium information have lower litigation risk and larger board size, which is typically expected of firms with better governance.

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