The Effect of Directors' and Officers' Liability Insurance and Indemnification on Voluntary Disclosure: Evidence from Canadian Firms

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ABSTRACT

This paper examines whether legal liability coverage, as measured by the level of Directors' and Officers' (D&O) liability insurance coverage and cash for indemnification, is associated with the quantity and the quality of the firm's voluntary disclosures. Using Canadian firms whose D&O insurance data are publicly available, I find that the higher the coverage, the more frequent the voluntary disclosures, especially for firms that are cross-listed in the U.S. I also find that more liability coverage also leads to disclosures of more precise, but less timely, bad news for firms that are cross-listed in the U.S., consistent with the litigation cost argument for the disclosure of bad news. Further, cash for indemnification is a more significant determinant of disclosure decisions than D&O insurance for my sample firms. Finally, I provide new empirical evidence that the timing decision to announce actual earnings is a function of legal liability coverage and the presence of voluntary disclosures in the form of management forecasts.

Keywords: *D&O (Directors' and Officers') liability insurance; indemnification; litigation costs; voluntary disclosures.*

Data Availability: *Data are publicly available.*

I. INTRODUCTION

The purpose of this paper is to investigate whether an association exists between liability coverage for directors and officers (through D&O liability insurance and the indemnification that a company provides) and the quantity and the quality of the company's voluntary disclosures. I also examine whether this association affects the market's reaction to the company's voluntary disclosures. Directors and officers can mitigate their personal legal liability through D&O insurance and indemnification, and companies can recoup their indemnification costs through D&O insurance. Core (1997) finds that firms with greater litigation risk are more likely to purchase D&O insurance. Skinner (1994) documents that managers voluntarily disclose bad news, fearing litigation risk (against firms, not specifically against directors and officers).[1] Healy and Palepu (2001) argue that voluntary disclosures are credible when adequate penalties exist for disclosing false information, such as legal liability. These findings suggest that D&O insurance and indemnification, which lowers directors' and officers' personal legal liability, might also affect voluntary disclosures.

Although D&O insurance is common as a part of the compensation package for U.S. directors and officers, U.S. firms are not required to disclose D&O insurance information. Consequently, I examine Canadian firms on the Toronto Stock Exchange between 2000 and 2001 because their insurance data are publicly available. The D&O insurance and indemnification provisions of the Canada Business Corporation Act (under which my sample firms fall) have been heavily influenced by the American Model Act (Schaeftler 1976), and the Canadian provisions and practices are quite similar to those of the U.S. Since the association

[1] The evidence in Kasznik and Lev (1995) and Baginski, Hassell, and Kimbrough (2002) is also consistent with the litigation costs argument.

between liability coverage and voluntary disclosure is significant even for cross-listed Canadian firms, this research has implications for standard setters that affect U.S. firms facing higher litigation risk.

My analysis indicates that an association exists between liability coverage and forecast frequency, precision, and/or horizon. In particular, the more liability protection, the more disclosures of all types of news occur, especially by the cross-listed sample, and the more liability protection, the more optimistic the news that is disclosed. More liability coverage also leads to disclosures of more precise, but less timely, bad news for cross-listed sample firms but not for local sample firms. When examining two components of total coverage, D&O insurance and cash, I find that cash for indemnification is the significant determinant of disclosure decisions. Interestingly, although I predict that the market is likely to discount good news from firms carrying a high level of total coverage, I find evidence of a significantly favorable market response to good news issued by firms with high total coverage–a result that is consistent with the significantly favorable effect D&O insurance has on shareholder wealth (Bhagat, Brickley and Coles 1987; Janjigian and Bolster 1990). Finally, I find that the timing of earnings announcements is affected by the firm's legal liability coverage level and whether or not management forecasts preceded the announcement.

This paper makes a contribution to the disclosure literature by documenting that liability coverage as measured by D&O insurance and cash for indemnification explains (in part) managers' disclosure behavior. This study also extends the litigation costs argument with an examination of the relationship between firm-specific legal liability and disclosure behavior. Further, this paper adds to our understanding of the credibility of voluntary disclosures. Limited research has been done regarding market adjustments for the credibility of voluntary disclosures.

Although the finding that U.S. markets respond favorably to good news by firms with high total coverage is weak, it suggests that liability coverage may be a determinant of the credibility of voluntary disclosures.

The remainder of the paper is organized as follows. Section II reviews the related literature. In Section III, I develop hypotheses followed by a description of empirical designs. Section IV contains sample selection procedures and data descriptions. Section V presents empirical findings. Finally, in Section VI, I discuss the conclusions drawn from my research.

II. LITERATURE REVIEW

D&O Liability Insurance

In order to protect directors and officers from personal liability incurred by business decisions, and to recruit highly qualified individuals, companies commonly bear the costs of litigation against directors and officers through D&O insurance and indemnification provisions. D&O liability insurance is purchased to recoup costs paid for indemnification or to cover any losses to which indemnification does not apply. In general, D&O insurance policies provide entity coverage that includes both corporate and personal coverage. Specifically, D&O insurance coverage usually (i) reimburses the firm for its indemnification payment for directors and officers, (ii) covers individual directors and officers for their wrongful acts to the extent that they have not been indemnified by the firm, or (iii) covers the firm to the extent that it is named as defendant along with the directors and officers.[2] Typical D&O policies cover damages, settlements, judgments, and litigation expenses but not civil or criminal fines or penalties, punitive damages, or multiple damages.

[2] Although the definition of a wrongful act could include a number of activities by directors and officers, it usually refers to any error, misstatement, misleading statement, omission, or neglect, which is partly related to voluntary disclosures.

Two opposing arguments about D&O insurance have been studied in the literature: the monitoring role and the managerial opportunism argument. Proponents argue that D&O insurance plays a governance role, since an insurer thoroughly scrutinizes the insured, and coverage limits and deductibles exist (Holderness 1990; O'Sullivan 1997). However, opponents argue that D&O insurance weakens the effectiveness of litigation as a managerial control device. Although the empirical evidence is mixed, recent studies support the latter argument that managerial opportunism is one of the determinants of D&O insurance purchase decisions. Using Canadian data, Core (1997) finds that firms with greater inside voting control tend to purchase more insurance and carry higher coverage. Boyer and Delvaux-Derome (2002) find that firms with weak governance systems, and thus more room for opportunistic behavior, are likely to buy D&O insurance. Chalmers, Dann, and Harford (2002) posit that managers are likely to purchase D&O insurance when they access the market with overvalued IPO stocks, since a high probability exists that the directors and officers will be sued by shareholders for any subsequent decline in stock price. Using proprietary information from U.S. firms, Chalmers et al. (2002) find that three-year post-IPO performance is negatively associated with D&O insurance coverage purchased along with the IPO. Although one might expect that the elimination or limitation of legal liability via D&O insurance would result in managerial opportunism, existing evidence does not clearly establish this causal relation. Nevertheless, previous research suggests that the decision to purchase D&O insurance with high coverage reflects *ex ante* managerial opportunism pertaining to legal liability.

Indemnification

In the U.S., indemnification originates from the enactment of the New York General Corporation Law in 1941, which led to the Delaware General Corporation Law in 1943,

legislation that influenced the enactment of the federal 1950 Model Business Corporation Act (the Model Act). As a result of a series of amendments over a half century, the current indemnification provisions eliminate liability for negligence, misconduct, or breaches in the duty of care. Most state indemnification statutes have mandatory and permissive provisions. Mandatory indemnification provisions are applied if the director or officer was successful based on the merits in the proceeding's outcome. In those situations where mandatory indemnification cannot be applied, indemnification continues to be permissible, and thus corporations have the power to provide indemnification. Since most lawsuits against directors and officers are settled before trial, firms usually provide directors and officers, through charter, by-law, employment contract, or board resolution, indemnification to the maximum amount allowed by the statutes if they acted in good faith and in the best interests of the firm. Although the indemnification provision is not limited to disclosures, it is most likely to influence managers' disclosure decisions since the most common lawsuit by stockholders is based on Rule 10b-5 of the 1934 Act (Fischer and Feldman 2002).[3]

Whether the two competing arguments for D&O insurance–the monitoring role and the managerial opportunism argument–also hold for indemnification is an open question. One similarity between D&O insurance and indemnification is that indemnification has maximum amounts allowed by the statutes and D&O insurance has coverage limits. The existence of coverage limits (and deductibles) is one rationale for the monitoring role argument.[4] However, compared to D&O insurance, general indemnification provisions tend to be munificent in the sense that exclusion from indemnification occurs only when directors and officers have not acted

[3] Under Rule 10b-5, directors and officers can be sued on the grounds that they made a false statement of a material fact or omitted to state it.

[4] I assume that D&O insurance deductibles are currently immaterial, since most D&O carriers have no personal deductible according to a recent survey by Tillinghast-Towers Perrin in 2003.

honestly in good faith and in a manner for the best interests of the firm. However, in practical matters, such exclusion rarely happens, since plaintiffs would intentionally seek not to prove actual intent by bad faith of directors and officers in order to make D&O insurance available for payments to plaintiffs (Black, Cheffins, and Klausner 2003).[5]

In addition, through D&O insurance, the insured are subject to the insurer's thorough scrutiny, whereas indemnification can be determined without external scrutiny and even without shareholders' approval.[6] Moreover, empirical evidence indicates that the market does not respond in the same way to D&O insurance as it does to indemnification. Bhagat et al. (1987) find that the market responds favorably to the purchase of D&O insurance. They find, however, that neither the passage of the New York statute in 1941 nor management–sponsored proposals to broaden indemnification provisions between 1973 and 1982 created a significant market response. In addition, Janjigian and Bolster (1990) examine stock returns occurring with elimination of liability for breach of fiduciary duty and broadened indemnification according to the amendments of the Delaware General Corporation Law, and find that liability elimination in Delaware firms has no significant effect on shareholder wealth. For these reasons, I expect that the monitoring role argument for D&O insurance applies but is weaker for indemnification, and that indemnification does not affect disclosure decisions in the same way that D&O insurance affects them.

[5] Black's et al. (2003) discussions only concern outside directors' liability. However, I believe that their argument still applies to all directors' and officers' liability, since typical D&O policies (at least revealed in proxy circulars) treat directors and officers similarly.

[6] According to Section 8.55 of the Model Act, the determination is made by one of the following: (i) by the board of directors by a majority vote of all the disinterested directors, if there are two or more disinterested directors, (ii) by special legal counsel selected by the board of directors that met the criteria (i), or (iii) by shareholders.

The Litigation Costs Argument for Voluntary Disclosures

Under SEC Rule 10b-5, shareholders can file lawsuits when managers have made a false statement of a material fact or omitted to state such a fact. Regarding the omission case, Skinner (1994) argues that managers preemptively disclose bad news to avoid large litigation costs. His rationale is that early disclosure helps prove that managers made timely disclosures of information, and that the early disclosure shortens the nondisclosure period. This in turn allows fewer investors to qualify as members of the plaintiff class, which lowers litigation costs. Skinner finds evidence that bad news is preempted more frequently than good news. Kasznik and Lev (1995) complement Skinner's work by showing that firms in bad news periods tend to preempt the announcement of bad news, and that when they do so, they are more likely to choose more quantitative and earnings-related disclosures.

Baginski et al. (2002) extend Skinner's argument by comparing firms' disclosure behaviors in countries with different litigation environments, specifically the U.S. and Canada. They find that Canadian firms in less litigious environments provide greater frequency, higher precision, and longer-term forecasts than U.S. firms. In addition, Baginski et al. (2002) find that Canadian firms tend to issue more forecasts in periods of earnings increase relative to periods of earnings decrease, but have no tendency to issue more forecasts in earnings decrease periods than U.S. firms. Johnson, Kasznik, and Nelson (2001) document a significant increase both in the frequency of forecasts issued by a firm and in the frequency of firms issuing forecasts following the passage of the safe-harbor provision of the 1995 Private Securities Litigation Reform Act (PSLRA). They also report that the increase in disclosure in the post-PSLRA period is more significant for firms with high litigation risk. Francis, Philbrick, and Schipper (1994) provide evidence inconsistent with the litigation costs argument. They fail to find a causal

relation between the presence or magnitude of bad news and the incidence of shareholder litigation, indicating that the preemption of bad news may not be effective for preventing litigation. However, a recent paper by Field, Lowry, and Shu (2003) argues that an endogenous relation between disclosures and litigation exists, since firms with higher litigation risk are more likely to preempt bad news (preemption effect), while firms that preempt bad news early are less likely to be sued (deterrence effect). After controlling for endogeneity using a simultaneous equation approach, Field et al. (2003) show that disclosure has a deterrent effect that bolsters the litigation costs argument.

Market Reaction to Voluntary Disclosures

Healy and Palepu (2001) argue that disclosures are credible when adequate penalties exist for the disclosure of false information. One of these penalties is liability imposed by the legal system. Whether voluntary disclosure with low legal liability is considered as credible as voluntary disclosure with high liability is an open empirical question. Prior research indicates that voluntary disclosure is credible (e.g., Ajinkya and Gift 1984; Pownall and Waymire 1989; McNichols 1989). However, limited evidence exists as to whether investors make a biased assessment of voluntary disclosures. Excluding the qualitative forecasts, Baginski, Conrad, and Hassell (1993) show a positive association between forecast precision and stock reaction, regardless of whether the forecast reveals good news or bad news. But Skinner (1994) indicates that the less precise the good news, the more favorable the stock price. When the bad news is less precise, excluding the qualitative news, the more stock prices drop. Frost (1997) reports that the market tends to discount good news from financially distressed firms, indicating an association between financial distress and the credibility of voluntary disclosures. Hutton, Miller, and Skinner (2003) report that the market reaction to good news increases, when forecasts are

provided with verifiable forward-looking statements about earnings components. Yet no significant increase in market responses to bad news forecasts occurs when supplementary statements are included. The recent paper by Baginski, Hassell, and Kimbrough (2004) documents that managers' explanations on their earnings forecasts result in greater price reactions to the forecasts.

III. HYPOTHESIS DEVELOPMENT AND RESEARCH DESIGN

Hypothesis Development

In this paper, D&O insurance coverage and cash are used as a proxy for expected legal liability. D&O insurance coverage (after subtracting the premium paid to purchase it) is a proxy for legal liabilities to be mitigated using external money. Cash is a proxy for legal liabilities to be mitigated using internal money through indemnification. I assume that the sum of D&O coverage and cash is the total liability coverage for a firm's managers. Each hypothesis has a set of two tests using either total coverage, or its two components, D&O insurance and cash for indemnification. Each measure of coverage is scaled by firm size for the following reasons: (i) firms that have a high probability of being sued will most likely buy more insurance coverage or be self-insured by storing up cash, and (ii) large firms tend to have more cash than small firms.[7]

The first hypothesis pertains to the association between total coverage (or its two components) and management earnings forecasts. First, I predict that firms with high coverage disclose less bad news and more good news. Given the legal liability threat, managers have an incentive to preempt bad news in order to minimize the expected legal liabilities, since investors can sue them on the grounds of omission of material information. They also have an incentive to

[7] Alexander (1991) documents that larger firms are more likely to be sued, consistent with her argument that the expected recovery from settlement should be big enough for investors to justify suing a firm.

withhold good news because the probability of being sued increases if the initial disclosure of good news turns out to be unfavorably inaccurate. If managers do not have adequately high legal liabilities, they are likely to make fewer bad news disclosures and more good news disclosures.

H1: *Firms with higher coverage are likely to issue fewer bad news forecasts but more good news forecasts.*

Second, I predict that total coverage (or its two components) affects the forecast precision of bad news. According to the litigation costs argument, bad news tends to be disclosed early due to fear of legal liability. Early disclosures are likely to be less precise due to their early release. Managers who have lower legal liability costs through high coverage may make fewer preemptive disclosures of bad news. If bad news is released close to the earnings report date, it is likely to be more precise.[8]

H2: *Firms with higher coverage are likely to issue more precise bad news forecasts.*

Third, I predict that an association exists between total coverage (or its two components) and the forecast horizon. Skinner (1994) provides rationales for why legal liability induces the preemptive disclosures of bad news: (i) managers can make a defensive argument that they disclosed information in a timely manner, and (ii) the shorter the nondisclosure period, the smaller the number of purchasers or sellers, which would lead to the smaller the litigation costs. Managers with lower expected legal liabilities might be less concerned about timely disclosure and the length of the nondisclosure period. Therefore, their disclosures of bad news are likely to

[8] If the positive association between forecast precision and stock reaction is well established, precision of bad news could be explained in terms of stock valuation. In other words, managers are likely to make a strategic choice of forecast precision in order to i) minimize the legal liabilities (the more precise, and thus less accurate forecast, the more liability later), and ii) to minimize the effects of price drop (the more precise the bad news forecasts, the less the immediate price drop). Since Baginski et al. (1993) and Skinner (1994) report mixed evidence on the association, H2a is not developed in terms of stock valuation.

be less timely, resulting in a shorter time horizon. However, the disclosures of good news would be more timely with the decrease of the expected liability, since managers would not withhold the disclosure because of their fear that it might later be found unfavorable.

H3a: *Firms with higher coverage are likely to issue less timely bad news forecasts.*
H3b: *Firms with higher coverage are likely to issue more timely good news forecasts.*

Finally, I predict that liability coverage affects forecast accuracy. Before the safe harbor provision of the 1995 PSLRA, managers had a duty to update or correct preexisting disclosures.[9] Section 21E of the PSLRA addresses the application of safe harbor: "Nothing in this section shall impose upon any person a duty to update a forward-looking statement." The exact application of this section is, however, unsettled in circuit courts. Some courts still impose a duty to update earnings expectations, but others impose only a duty to correct them (Hale and Dorr 2001). Thus, although responsibility to update is lessened by the safe harbor provision, managers are still likely to be concerned about the duty. Lower expected legal liabilities could cause managers to overlook this requirement which will result in less accurate forecasts.

H4: *Firms with higher coverage are likely to issue less accurate forecasts.*

The final hypothesis relates to whether liability coverage affects the market's reaction to management forecasts. The realization of bad news following good news forecasts could be grounds for litigation, since shareholders can allege that managers misrepresented material information. Thus, managers who fear legal consequences might be wary of disclosing good news. With lower legal liabilities, they are likely to be less cautious in the disclosure of good news. If the market knows, however, that D&O insurance and indemnification lower managers'

[9] The duty to update applies to forward-looking information that was true when made, while the duty to correct applies to historical facts that were not true when made.

personal liabilities, and this affects their decision to disclose good news, the market is likely to discount the credibility of good news from firms that carry high coverage.

H5: *The market discounts good news forecasts from firms with high coverage.*

Research Design for Liability Coverage and Voluntary Disclosures

The common control variables for tests of forecast properties are as follows: firm size (SIZE), earnings volatility (EVOLATILITY), price change over 250 trading days (PCHANGE), membership in high-tech industry (HIGHTECH), membership in regulated industries (REGULATED), and the quality of corporate governance. The latter is measured by (i) a percentage of outside directors in a board of directors (OUTSIDE) and (ii) the presence of outside block-holders who own over 10% of a firm's stock (DOUTBLOCK).[10] Cox (1985) provides evidence that management forecasts are associated with firm size. The natural log of the firm's total assets at the beginning of the current forecast quarter represents firm size. Greater earnings volatility implies a higher likelihood of incorrect forecasts, which, in turn, leads to less willingness to forecast (Waymire 1985). Earnings volatility is measured by the absolute value of difference between actual earnings in the current period and those of the same quarter in the last period. According to Verrechia (1983), firms' willingness to provide voluntary disclosures and what they choose to disclose depends on the market's expectations about the probability distribution over the possibly different values of the manager's private information. To control for the firms' "good/bad information" environments when comparing the amount and type of voluntary disclosures, I use the price changes (adjusted for the firm's beta and the market movement) occurring in the preceding 250 trading days. The idea is that the market's

[10] Outside directors are defined as those who are not officers of a firm.

expectation of the firms' disclosure possibilities is likely to be reflected in price movements in the period prior to the firms' disclosure. Investors of high-tech firms would have more demand for management forecasts because those firms tend to be small and risky. Firms in regulated industries have less demand for management earnings forecasts, since these firms are required to disclose a great deal of information. Ajinkya, Bhojraj, and Sengupta (2003) report that firms with greater outside directorship and institutional ownership tend to issue forecasts, and that those forecasts are more precise, more accurate and less optimistic. For institutional ownership, I use the available data of outside block-holders who own over 10% of a firm's stock.

The multinomial logistic regression models (1) and (2) are estimated for H1.[11] Multinomial logit regression is used because it can test the unconditional disclosure choices that minimize the selection bias problem, and it provides a joint test by calculating the relative probability of a given choice against the baseline choice. In particular, individual observation *i*'s probability, associated with a choice for news type, is expressed as a fraction of the sum of all of observation *i*'s probabilities across a range of options (in this paper, good, bad, neutral, or no news). The qualitative dependent variable, CHOICE, is the type of news (good, bad, neutral, or no news), with good news used as a baseline choice. A forecast is classified as good (bad) news if a quantitative forecast is higher (lower) than the market expectation or a qualitative forecast has a positive (negative) message.[12] A quantitative forecast is classified as neutral news if it has

[11] The ordinary regression model could cause a misspecification problem because forecast frequency is count data for which Poisson regression is appropriate. But in my sample, a Poisson regression that requires taking a log linear function of a dependent variable is not appropriate, since many firms do not issue forecasts. The ordinary logistic regression with a dummy variable indicating issuance and non-issuance of forecasts also does not work for H1, since the regression tests whether total coverage moves a firm's threshold level of disclosure. Considering that a firm's disclosure policy tends to be sticky, I focus on the relative issuance of good news and bad news when a firm provides a forecast.

[12] The market expectation is determined in the following order: (i) median analyst forecast on I/B/E/S, (ii) existing management forecast if I/B/E/S analyst forecasts are not available, and (iii) the seasonal random walk model if I/B/E/S analyst forecasts and existing management forecasts are not available.

a confirming or neutral message. If a firm provides no forecast in a quarter, the quarter is classified as a "no news" quarter.

I measure total liability coverage (TOTAL) by the sum of D&O insurance coverage (ADJCOV) and cash for indemnification (CASH), scaled by firm size; this assumes that the total coverage captures the extent of the expected legal liability, that is, high coverage proxies for low legal liability.[13] According to H1, the coefficients of TOTAL, ADJCOV, and CASH are expected to be negative ($\alpha_1 < 0$, $\alpha_{1a} < 0$, and $\alpha_{1b} < 0$).

$$P(CHOICE) = \alpha_0 + \alpha_1 TOTAL + \alpha_2 SIZE + \alpha_3 EVOLATILITY + \alpha_4 PCHANGE + \alpha_5 HIGHTECH + \alpha_6 REGULATED + \alpha_7 OUTSIDE + \alpha_8 DOUTBLOCK + \varepsilon \quad (1)$$

$$P(CHOICE) = \alpha_0 + \alpha_{1a} ADJCOV + \alpha_{1b} CASH + \alpha_2 SIZE + \alpha_3 EVOLATILITY + \alpha_4 PCHANGE + \alpha_5 HIGHTECH + \alpha_6 REGULATED + \alpha_7 OUTSIDE + \alpha_8 DOUTBLOCK + \varepsilon \quad (2)$$

For forecast precision (PRECISION), a higher value is assigned to the more precise forecasts; PRECISION equals 3, 2, 1, and 0 for point, range, open-interval, and other types of forecasts (e.g., qualitative), respectively. An additional control variable for testing precision is forecast horizon (HORIZON). Forecast horizon affects forecast precision because managers have greater uncertainty for longer forecast horizons (King, Pownall, and Waymire 1990). In accordance with previous studies, forecast horizon will be measured by the number of calendar days between the forecast date and the period-end being forecasted. Preliminary tests (not reported in table) show that total coverage and its two components are highly correlated with firm size. To control for the correlation, I use the excess coverage (EXTOTAL) beyond the expected amount that a firm would carry for its size, as measured by the residuals from the

[13] The currency in this paper is Canadian dollars, unless otherwise stated. For firms reporting D&O insurance coverage in U.S. dollars, the average exchange rate over the fiscal year is used to convert U.S. dollars to Canadian dollars. The average exchange rate during the sample period of 2000-2001 was 0.66 US cents for one Canadian dollar. The rates were not volatile during the sample period, since the changes range from -4.5% to + 5%.

regression of total coverage on firm size. With regard to H2, the coefficients of EXTOTAL, EXADJCOV, and EXCASH are expected to be positive ($\beta_1 > 0$, $\beta_{1a} > 0$, and $\beta_{1b} > 0$).

$$PRECISION = \beta_0 + \beta_1 EXTOTAL + \beta_2 SIZE + \beta_3 EVOLATILITY + \beta_4 PCHANGE + \beta_5 HIGHTECH + \beta_6 REGULATED + \beta_7 OUTSIDE + \beta_8 DOUTBLOCK + \beta_9 HORIZON + \varepsilon \quad (3)$$

$$PRECISION = \beta_0 + \beta_{1a} EXADJCOV + \beta_{1b} EXCASH + \beta_2 SIZE + \beta_3 EVOLATILITY + \beta_4 PCHANGE + \beta_5 HIGHTECH + \beta_6 REGULATED + \beta_7 OUTSIDE + \beta_8 DOUTBLOCK + \beta_9 HORIZON + \varepsilon \quad (4)$$

For H3a and H3b regarding forecast horizon, the regression equations (5) and (6) are estimated.[14] A forecast is good (bad) news whose value is higher (lower) than the market expectation. $\gamma_2+\gamma_3 > 0$, $\gamma_{2a}+\gamma_{3a} > 0$, and $\gamma_{2b}+\gamma_{3b} > 0$ are expected for good news (SIGN=1), while $\gamma_2 < 0$, $\gamma_{2a} < 0$, and $\gamma_{2b} < 0$ are expected for bad news (SIGN=0).

$$HORIZON = \gamma_0 + \gamma_1 SIGN + \gamma_2 EXTOTAL + \gamma_3 SIGN * EXTOTAL + \gamma_4 SIZE + \gamma_5 EVOLATILITY + \gamma_6 PCHANGE + \gamma_7 HIGHTECH + \gamma_8 REGULATED + \gamma_9 OUTSIDE + \gamma_{10} DOUTBLOCK + \varepsilon \quad (5)$$

$$HORIZON = \gamma_0 + \gamma_1 SIGN + \gamma_{2a} EXADJCOV + \gamma_{2b} EXCASH + \gamma_{3a} SIGN * EXADJCOV + \gamma_{3b} SIGN * EXCASH + \gamma_4 SIZE + \gamma_5 EVOLATILITY + \gamma_6 PCHANGE + \gamma_7 HIGHTECH + \gamma_8 REGULATED + \gamma_9 OUTSIDE + \gamma_{10} DOUTBLOCK + \varepsilon \quad (6)$$

To test H4, the following equations (7) and (8) are estimated using point estimates and range estimates.[15] The forecast error is the difference between the most recent management earnings forecasts and the actual earnings, deflated by share price at the beginning of the forecast quareter, while forecast accuracy is the absolute value of forecast error ($\left|\text{MEFERROR}\right|$). I

[14] Previous papers determine horizon by the number of calendar days between the forecast date and the fiscal period-end (Baginski and Hassell 1997; Bamber and Cheon 1998; Baginski et al. 2002). However, many firms issue forecasts between the end of a fiscal period and the report date of actual earnings. Thus, I also examine a horizon according to the number of calendar days from forecast date to the report date of actual earnings.

[15] For range estimates, the mid-point of a range is used.

expect $\upsilon_2+\upsilon_3 > 0$, $\upsilon_{2a}+\upsilon_{3a} > 0$, and $\upsilon_{2b}+\upsilon_{3b} > 0$ for good news, while $\upsilon_2 > 0$, $\upsilon_{2a} > 0$, and $\upsilon_{2b} > 0$ for bad news.

$$|MEFERROR| = \upsilon_0 + \upsilon_1 SIGN + \upsilon_2 EXTOTAL + \upsilon_3 SIGN * EXTOTAL + \upsilon_4 SIZE + \upsilon_5 EVOLATILITY + \upsilon_6 PCHANGE + \upsilon_7 HIGHTECH + \upsilon_8 REGULATED + \upsilon_9 OUTSIDE + \upsilon_{10} DOUTBLOCK + \varepsilon \quad (7)$$

$$|MEFERROR| = \upsilon_0 + \upsilon_1 SIGN + \upsilon_{2a} EXADJCOV + \upsilon_{2b} EXCASH + \upsilon_{3a} SIGN * EXADJCOV + \upsilon_{3b} SIGN * EXCASH + \upsilon_4 SIZE + \upsilon_5 EVOLATILITY + \upsilon_6 PCHANGE + \upsilon_7 HIGHTECH + \upsilon_8 REGULATED + \upsilon_9 OUTSIDE + \upsilon_{10} DOUTBLOCK + \varepsilon \quad (8)$$

Research Design for Market Reaction to Voluntary Disclosures

To test H5, I examine the response coefficients obtained from the regression of a three-day window CAR (around the management forecast date) on forecast deviation. The forecast deviation (FD) that captures the unexpected portion of earnings equals the difference between management forecasts and expected earnings at the announcement date, scaled by stock price at the beginning of the current forecast quarter. I do not include control variables to indicate the presence of verifiable forward-looking statements or soft talk discussion, since information included in the statements could affect the magnitude of forecast deviation, which in turn, results in the multi-collinearity between the variables and forecast deviation.[16] By excluding the dummies in such an event study that suffers from a compounding effect, the effect of management earnings forecasts on stock returns can be found in a relatively parsimonious manner. To clarify the difference in market responses, I choose a high-ranked group in the top 25% (RANK=1) and a low-ranked group in the bottom 25% (RANK=0), according to the level of excess coverage. The regression equation (9) is estimated for the H5. The sign of θ_3 is expected to be negative for the good news group with FD > 0.

[16] To examine whether the inclusion of verifiable statements or soft talk discussions affects the credibility of the forecast, I have additional tests including dummies to indicate the presence of verifiable statements or soft talk discussions.

$$CAR = \theta_0 + \theta_1 RANK + \theta_2 FD + \theta_3 RANK * FD + \varepsilon \quad (9)$$

IV. SAMPLE SELECTION AND DATA DESCRIPTION

Sample Selection

The sample consists of Canadian firms listed on the Toronto Stock Exchange (TSX) from 2000 to 2001.[17] Their D&O insurance data are publicly available in a proxy circular because, since 1993, the Exchange has required firms to disclose firms' risk and their risk management tools in proxy circulars in order to strengthen corporate governance (Core 1997). Specifically, the sample includes (i) Canadian firms that were cross-listed on TSX and U.S. markets and (ii) local firms that were at least part of the TSX 300; these are identified through *TSE Review* and *S&P Research Insight*.

Cross-listed firms provide an appropriate setting to test the research questions in this paper because they must also abide by the SEC disclosure rules the same as U.S. firms.[18] For locally listed firms, the TSX does not provide an anti-fraud provision such as SEC Rule 10b-5 or a rule regarding disclosures during the sample period.[19] But the recent rule, National Instrument 51-102 *Continuous Disclosure Obligations* (similar to the SEC Rule 10b-5) is likely to affect

[17] The internet stock bubble burst in the Spring of 2000, and high profile corporate scandals broke in the Fall of 2001. To see whether the market downturn affected high-tech firms' decisions to buy D&O insurance or increase coverage, I examine the changes in coverage level of 33 cross-listed high-tech firms in my sample. Only one of those firms increased the level of coverage. The corporate scandals of 2001 are not likely to have influenced firms' decisions concerning the level of coverage during my 2000-2001 sample period because most of my sample firms could change their insurance contracts in 2002.

[18] On-going controversy continues in the finance and law area whether foreign firms listed on the U.S. market effectively bond themselves in compliance with U.S. law. Critics argue that such foreign firms face less litigation risk under U.S. law than U.S. firms do, based on the rarity of law enforcement against foreign firms (Siegel 2005). However, according to Coffee (2002), the SEC tends to impose low-visibility sanctions such as warnings or informal contacts before they become public. Accounting studies support the common belief that listing on the U.S. market brings high litigation risk (refer to Seetharaman, Gul, and Lynn 2002; Frost and Pownall 1994).

[19] Although the TSX requires firms to follow the regulations for timely disclosure, its enforceability is weak in the sense that a violation of the regulation brings only trading halts.

firms' disclosure behavior during the sample period.[20] In addition to NI 15-102, the Ontario Securities Commission (OSC) has launched the *Continuous Disclosure Review Program* in July 2000 in order to improve the quality and the timeliness of disclosures. The Program has actually brought several high-profile lawsuits, which would make Canadian firms adjust their disclosure policies even before the NI 15-102 becomes effective.

Table 1 presents the sample selection process. The initial sample consists of 2,558 cross-listed firm-quarters of 309 firms and 2,984 local firm-quarters of 371 firms identified from the monthly *TSE Review* and *S&P Research Insight*. I exclude firms that have undergone a merger and acquisition, have gone bankrupt or private, or were de-listed from TSX. Next, based on the monthly *TSE Review*, I delete 766 firm-quarters that were not cross-listed during a whole quarter for the cross-listed sample and 971 firm-quarters that were cross-listed at least one month during a quarter for the local sample. Further, I remove firm-quarters whose financials in *COMPUSTAT* and stock prices in *CRSP* (for cross-listed firms) or in *YAHOO Finance* (for local firms) and firm-quarters for which proxy circulars in the *www.sedar.com* are not available. Finally, I exclude the firm-quarters whose proxy circulars do not reveal coverage amount and premium.[21] After these deletions, the final sample includes 908 firm-quarters of 143 cross-listed firms and 990 firm-quarters of 164 local firms.

[20] This legislation by the Canadian Securities Administrators (CSA) stems from the TSX Allen Committee's 1995 interim report. In the final report, the Committee recommends a statutory regime to introduce civil liability for negligent misrepresentations so that investors in the market receive meaningful, timely, complete, and accurate information. Experts anticipate that the new legislation will facilitate more aggressive U.S.-style class actions in Canada.

[21] Some firms state in their proxy circulars that they carry D&O insurance, but do not reveal the amount. When a proxy circular lacks information, I assume that the firm does not carry D&O insurance.

Data Description

Descriptive statistics of liability coverage in Table 2 are consistent with the common notion that firms cross-listed in U.S. markets face more litigation risk. While cross-listed firm-quarters are slightly larger than local firm-quarters, their total coverage and D&O coverage (adjusted for purchase premium) are more than twice that of local firm-quarters (58.33 vs. 25.72 and 49.78 vs. 20.02). D&O insurance coverage, before adjusting for premium paid, is still greater for the cross-listed sample than for the local sample, regardless of whether or not the coverage is scaled by firm size (69. 17 vs. 41.81 and 8.59 vs. 5.71). However, after controlling for firm size, D&O coverage per premium dollar for the cross-listed sample is less than half of that for the local sample (66.87 vs. 148.56), which implies that D&O insurance is much more expensive for cross-listed firms. In addition, the cross-listed sample has more firm-quarters with D&O insurance than the local sample (76 percent vs. 72 percent).[22] Moreover, a significantly positive correlation exists between D&O coverage (or adjusted D&O coverage) and cash, after scaling by firm size. This provides additional evidence that cross-listed firms face more litigation risk, since the correlation can be interpreted that a firm having more cash tends to purchase D&O insurance with higher coverage. The significant correlation for the cross-listed sample is much stronger than that of the local sample (0.36 vs. 0.09). Table 2 also shows that the cross-listed sample has higher mean and median earnings volatility than the local sample. In addition, the cross-listed sample has more firm-quarters in high-tech industry than the local sample has (24 percent vs. 15 percent).

[22] A recent survey by Tillinghast-Towers Perrin (2003) reports that about 92 percent of Canadian survey participants purchase D&O insurance. The percentage of firms carrying D&O insurance in my sample is lower than that in the survey. This could be because I assume that if a firm does not mention D&O insurance in its proxy circular, it does not carry the insurance. To see whether my assumption affects the results, I have additional tests using only firms that carry D&O insurance.

V. EMPIRICAL RESULTS

Tests of H1: Forecast Frequency

Frequency analysis (not tabulated) shows that the high coverage cross-listed group (where coverage is defined as the level of total coverage, adjusted D&O coverage, or cash) provides more of all types of news—good, bad, or neutral. Table 3 reports multinomial logistic regression results after controlling for other factors that could affect firms' disclosure decisions. The coefficient of total coverage is significantly negative for both the cross-listed and the locally listed sample ($p = 0.01$ and $p = 0.03$, respectively). The joint test results support the hypothesis H1 that firms with higher coverage disclose less bad news but more good news. Specifically, total liability coverage results in the increase in good news which is significantly larger than the increase in bad news. Moreover, the regression results indicate that even local firms in less litigious environments provide less bad news but more good news when they carry high total coverage. In summary, the results indicate that the more liability protection, the more disclosures of all types of news, especially by the cross-listed sample, and the more liability protection, the more optimistic the news.

When total coverage is split into adjusted D&O coverage and cash, the coefficient of adjusted D&O coverage, α_{1a}, is insignificant, while the coefficient of cash, α_{1b}, is significantly negative with $p < 0.01$ for the cross-listed and $p = 0.01$ for the local sample. That is, only cash appears to significantly affect managers' disclosure decisions for good and bad news. This is consistent with the prediction that indemnification and D&O insurance do not affect disclosure decisions in the same way. My finding suggests that internal money for liability protection is more important to managers' decisions than external money. This is intuitive, since indemnification is allowed even in criminal cases as long as managers acted in good faith for the

best interests of the firm, while typical D&O insurance requires scrutiny for payments and excludes the claims due to fraud by the insured or those associated with regulatory agencies. The finding that more cash results in more disclosures of optimistic news bolsters the managerial opportunism argument for indemnification.

Tests of H2: Forecast Precision

The initial sample for forecast precision tests includes 181 bad news forecasts by the cross-listed sample and 71 bad news forecasts by the local sample. I exclude the forecasts that were released after the period-end being forecasted, since the horizon for precision tests is defined as the number of days between forecast date and the end of the period being forecasted, in accordance with previous studies. After this exclusion, the cross-listed sample has 143 bad news forecasts and the local sample has 48 bad news forecasts. However, the ordered logistic regression results in Table 4 indicate that liability coverage influences decisions. As expected from H2, the coefficient of excess total coverage is significantly positive for the cross-listed sample at the 10 percent significance level. That is, if a firm has more liability coverage, bad news is less preemptive, which in turn leads to more precise news. When excess D&O insurance coverage and excess cash are used, only excess cash is significantly positive with $p = 0.03$. This result agrees with the forecast frequency test-finding that managers have more concern for liability protection through indemnification than D&O insurance.[23]

The insignificant coefficients of liability coverage for the local sample, either total coverage or its two components, indicate that liability protection does not have a significant

[23] I perform the same tests only on firms that carry D&O insurance for the following reasons: (i) such firms are likely to be concerned with litigation risk, or (ii) as I have assumed, the lack of a firm's D&O insurance disclosure in its proxy circular means that the firm does not carry D&O insurance, but this assumption can be problematic. Nevertheless, the tests show strong results that the more liability protection cross-listed firms have, the more precise bad news they release.

effect on precision decisions for local firms facing less litigation risk. Although Baginski et al. (2002) find that Canadian firms in a less litigious environment provide more precise forecasts than U.S firms do, they do not control for firm-specific legal liability. In other words, while their study indicates that a firm's litigation risk affects its precision decisions, my findings suggest that once a firm is insured by D&O insurance and cash, legal liability is no longer a significant determinant of forecast precision for the firm facing less litigation risk. The liability is still influential, however, in precision decisions made by firms facing more litigation risk.

Tests of H3a and H3b: Forecast Horizon

For forecast horizon tests, I begin with good and bad news consisting of 445 forecasts by the cross-listed sample and 222 forecasts by the local sample. Since many firms provide earnings forecasts between the fiscal period-end and the report date, I divide forecast horizon into two sub-periods: (i) the number of calendar days from the forecast date to the end of the period being forecasted and (ii) the number of calendar days from the period-end to the report date. I call the first measure the "pre-period-end horizon" and the second one the "post-period-end horizon." For tests with the two measures, I remove forecasts when their actual earnings report dates are unavailable in *COMPUSTAT*. After excluding those forecasts, I obtain 355 forecasts by the cross-listed and 186 forecasts by the local sample.[24] In this section, I examine the effect of liability coverage on pre-period-end horizon, since previous research commonly uses it as a measure of forecast horizon. Post-period-end horizon will be investigated in the additional analysis section. The final sample with positive pre-period-end horizon includes 293 forecasts by the cross-listed and 155 forecasts by the local sample.

[24] Three report dates in the cross-listed sample and two dates in the local sample are available in *COMPUSTAT*, but these occurred before the forecast dates. I exclude them, assuming they resulted from coding errors.

The regression results of models (5) and (6) using a pre-period-end horizon indicate that three measures for liability coverage are not significant (not reported in table). However, as presented in Table 5, when the samples are divided into two groups of small and large firms, the excess total coverage and the excess cash of the large cross-listed firms become significantly negative ($p = 0.02$ for EXTOTAL in panel A and $p = 0.02$ for EXCASH in panel B).[25] Accordingly, if a large firm—tends to be sued more often than a small firm—has more liability coverage, its bad news tends to be less preemptive, consistent with the litigation costs argument for voluntary disclosures. Panel B of Table 5 reports that the significance of excess total coverage for the cross-listed sample is mainly driven by excess cash, which agrees with previous findings in this research that shows cash as a primary determinant of disclosure decisions. Moreover, these results suggest that excess coverage, either total coverage or its two components, does not have a significant effect on the timing decision of good news disclosures, inconsistent with H3b. In brief, the test results support hypothesis H3a that firms with higher coverage, especially cash for indemnification, are likely to issue less timely bad news forecasts, as long as they are large cross-listed firms that face a high litigation risk.

Tests of H4: Forecast Accuracy

After the exclusion of extreme outliers in the top 5% (7 observations of the cross-listed sample and 3 observations of the local sample), 131 point and range type forecasts from the cross-listed sample and 44 forecasts from the local sample are available for accuracy tests. No significant difference in forecast accuracy appears between the cross-listed and the local sample and the test results indicate that forecast accuracy is not associated with liability coverage (not

[25] Further analysis (not tabulated) shows that, when using only firms that carry D&O insurance, excess total coverage becomes more significant with $p < 0.01$. This implies that liability coverage more significantly affects timing decisions by firms concerned about litigation.

reported in table).[26] However, insignificant results may be attributable to the small sample size and the measurement error problem due to the translation of U.S. dollars into Canadian dollars.[27] Future research using a larger sample and a sub-sample consisting of firms that report in U.S. dollars will provide a more conclusive answer as to whether liability coverage is a significant determinant of forecast accuracy.

Tests of H5: Market Reaction to Voluntary Disclosures

In this section, I examine whether the market discounts good news forecasts according to liability coverage levels. Initially, the cross-listed sample consists of 264 good news forecasts and the local sample has 151. I include only point and range type forecasts that can calculate forecast deviations, decreasing the number of observations to 146 good news forecasts in the cross-listed sample and 51 good news forecasts in the local sample. After truncating extreme forecast deviations in the top 5% and winsorizing extreme CARs at the top 5% and the bottom 5%, the final cross-listed sample has 138 good news forecasts, and the local sample includes 48.

The significantly positive coefficients of RANK in panel A of Table 6 indicate that, contrary to the predictions in H5, firms with high excess total coverage receive a significantly favorable response, especially from U.S. markets. Regardless of whether good news comes from a high-ranked group (FD+RANK*FD) or a low-ranked group (FD), good news itself is not significant to either the cross-listed or the local sample.[28] Considering that the winsorized CARs

[26] Since a measurement error problem could occur when using mid-point of range estimates when a firm provides a wide range of forecasts, I run the same tests with point type forecasts only. The results still show that liability coverage is insignificant to forecast accuracy.

[27] Although the exchange rates were not volatile during the sample period, the choice of exchange rates could have affected the power of a test. Forecast errors deflated by share price, mostly in decimals between -0.1 and 0.1, could be sensitive to the choice of exchange rate.

[28] The additional tests including a dummy variable indicating provision of verifiable statements show that adjusted R-squares decrease, and that the dummy is insignificant, in all tests. Furthermore, additional provision of soft information turns out to be significantly positive for the response to good news, which is inconsistent with Hutton's et al (2003) findings.

still remain left-skewed, and that most firms experienced quite a volatile downturn during the sample period between 2000 and 2001, this event study might detect with difficulty the sole effect of management forecasts on stock returns.

One could expect that investors consider excess cash as a signal of financial health. If true, high excess cash could drive a significantly positive response of U.S. markets to forecasts from firms with high excess total coverage. To scrutinize this issue, I run two tests using ranks from either excess D&O coverage or excess cash. Panels B and C show that, rather than excess cash, excess D&O coverage *weakly* drives the significance for the cross-listed sample. These results are inconsistent with the previous finding (in this research) that cash as internal money is paramount to managers' disclosure decisions. However, these results are in line with existing evidence that the market responds favorably to broadening D&O insurance coverage, but it does not positively respond to the passage of indemnification provisions (Bhagat et al. 1987; Janjigian and Bolster 1990). My finding adds evidence that U.S. markets differentiate D&O insurance coverage from cash, and that investors in U.S. markets are likely to consider D&O insurance as a device for monitoring managers and/or as a safeguard for the legal liability of the firm itself. A significantly negative response to positive forecast deviations by the low-ranked cross-listed sample (FD) does not seem sensible. The regression results could suffer from the small sample size, volatile sample period, or the measurement error problem due to the translation of U.S. into Canadian dollars. Increased sample size and further exploration using the different sample period may provide more conclusive evidence for H5.

Additional Analysis: Timing Decision of Actual Earnings Announcements

I find that as the level of excess total coverage and excess cash increase, the horizon measured by the number of days between the forecast date and the report date is insignificant,

whereas the pre-period-end horizon of large firms is significantly shorter for bad news forecasts. Thus, I predict that the post-period-end horizon for bad news forecasts will be longer when liability coverage is higher, in other words, the association between liability coverage and the post-period-end horizon will be positive. However, whether managers know that the forthcoming actual earnings are good or bad will likely affect the post-period-end horizon as well. Thus, I examine how liability coverage, sign of forecasts, and sign of forthcoming news of actual earnings work together for post-period-end horizon decision. The number of observations in the cross-listed sample decreases to 210 while that of the local sample decreases to 119, after good news and bad news are selected according to the signs of unexpected actual earnings.

As reported in panel A of Table 7, two signs affect the post-period-end horizon, and in opposite ways. Two signs are significant at the 5% level for the cross-listed sample, whereas only the sign of forecasts (SIGN) is significant for the local sample. That is, the post-period-end horizon gets longer if managers previously provided good news forecasts, while it gets shorter if they have forthcoming good news of actual earnings. The significantly positive coefficients of excess total coverage (EXTOTAL and EXTOTAL+SIGN*EXTOTAL) illustrate that, regardless of whether managers provided good news or bad news forecasts before, once they know they cannot beat market expectations, they delay the announcement of bad news of actual earnings when excess total coverage is high. When managers already provided bad news forecasts, and have forthcoming bad news of actual earnings, external money (EXADJCOV) significantly affects their timing decision for the announcements (panel B, Table 7). It is possible that, in such cases, managers can have a solid defense to the insurer that they warned early; therefore managers rely more on D&O insurance. However, when they already provided good news forecasts, but will provide bad news of actual earnings, cash (EXCASH+SIGN*EXCASH)

significantly affects their decisions. Unfavorable actual earnings following good news forecasts carry a high probability that the firm will be sued. If sued, the insurer would investigate whether good news was provided with fraudulent intention. If true, it would refuse insurance payments to managers and/or firms. In such cases, managers count more on cash than D&O insurance. Overall, the effect of liability coverage on the timing of unfavorable actual earnings announcements depends on the existence of good or bad news forecasts. Cash is a significant determinant to the timing of bad news earnings announcements when a cross-listed firm previously provided good news forecasts, whereas D&O insurance is the significant determinant when the firm previously provided bad news forecasts. Liability coverage, however, seems insignificant to the timing decision of actual earnings announcements for the local sample.

VI. CONCLUSIONS AND LIMITATIONS

I examine whether an association exists between liability coverage and forecast frequency, precision, horizon, or accuracy, and investigate whether the markets react differently to voluntary disclosures according to the level of liability coverage. Using Canadian firms whose D&O insurance data are publicly available, I find that the more liability protection, the more disclosures of all types of news occur, especially by the cross-listed sample, and that the more liability protection, the more optimistic the news.[29] More liability coverage also leads to disclosures of more precise, but less timely, bad news for cross-listed firms but not for local firms. These results confirm the findings by previous studies in which legal liability can partly explain firms' voluntary disclosure decisions, especially for bad news (Skinner 1994; Kasznik

[29] One might expect that the decision to disclose would increase the level of liability coverage. If endogeneity exists, we would observe changes in the level of coverage before changes in disclosure frequency. My sample shows that only five cross-listed firms have increased D&O insurance coverage limits and then increased disclosure frequencies. In addition, my sample firms' D&O insurance coverage limits are quite stable over the sample period. These observations indicate that my findings are not affected by endogeneity.

and Lev 1995; Baginski et al. 2002). In addition, I find that between two components of total coverage, D&O insurance and cash for indemnification, cash is the significant determinant of disclosure decisions.

The results do not support, however, my prediction that firms with higher coverage are likely to issue less accurate forecasts, for both cross-listed firms and local firms. Further, I predict that the market is likely to discount good news from firms carrying high total coverage. Opposed to this prediction, my results indicate that firms with high total coverage receive a significantly favorable market response to their good news forecasts, especially in U.S. markets. Although these results do not support my prediction, they are consistent with existing evidence that D&O insurance has a significantly favorable effect on shareholders' wealth (Bhagat et al. 1987; Janjigian and Bolster 1990). Contrary to the early findings of the present study that cash is a significant determinant of disclosure decisions, the market test results indicate that investors consider managers' liability protection through D&O insurance to be more important than cash for indemnification. Although the findings are limited by a sample period that had a volatile downturn and small sample size, these inconsistencies still raise the question as to why investors react favorably to good news released by managers with low liability coverage. Additionally, I provide new empirical evidence that the timing decision of actual earnings announcements is a function of a firm's legal liability coverage and the presence of forecasts, as well as a sign of actual earnings. Why legal liability coverage affects managers' timing decisions and what benefits they can potentially receive from the delay of such announcements need further examination.

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TABLE 1
Sample Selection

Criteria	Cross-listed sample		Locally listed sample	
	No. of firm-quarters	No. of firms	No. of firm-quarters	No. of firms
TSE Review and *S&P Research Insight*	2,558	309	2,984	371
M&A, bankrupt, private, or delisted	(568)	(70)	(464)	(58)
Not listed during the whole quarter	(766)	(55)	-	-
Cross-listed in at least one month in a quarter	-	-	(971)	(101)
Financials not in *COMPUSTAT*	(158)	(20)	(312)	(20)
Prices unavailable in *CRSP*	(112)	(15)	-	-
Prices unavailable in *YAHOO Finance*	-	-	(205)	(20)
Proxy circular not available	(8)	0	(9)	(2)
Coverage and premium not revealed	(38)	(6)	(33)	(6)
Final sample	908	143	990	164

TABLE 2
Descriptive Statistics for Sample Firm-quarters

		Cross-listed (N=908)			Locally listed (N=990)		
		Mean	Median	Std Dev	Mean	Median	Std Dev
Adjusted coverage/Firm size		49.78	8.15	192.56	20.02	5.12	92.32
Cash/Firm size		8.55	5.22	10.37	5.70	3.03	10.45
Total coverage/Firm size		58.33	17.04	196.49	25.72	8.88	93.79
D&O coverage (m$)		69.17	30.08	105.81	41.81	20.00	78.87
D&O coverage/Firm size		8.59	5.25	10.38	5.71	3.04	10.46
D&O premium (m$)		0.25	0.15	0.32	0.08	0.04	0.13
D&O premium/Firm size		0.03	0.02	0.04	0.01	0.01	0.01
(D&O coverage/Premium)/Firm size		66.87	39.20	122.28	148.56	61.08	426.19
Firm size		6.73	6.74	2.21	6.48	6.35	1.71
Outside directors		79%	83%	12%	76%	78%	13%
Quarterly earnings volatility		0.08	0.01	0.59	0.06	0.01	0.47
Annual earnings volatility		0.32	0.04	1.48	0.20	0.03	1.28
Beta- and market-adjusted price change		-38	7	2,221	-78	68	1,968
D&O insurance	No	214	(24%)		No	280	(28%)
	Yes	694	(76%)		Yes	710	(72%)
High-tech	No	694	(76%)		No	837	(85%)
	Yes	214	(24%)		Yes	153	(15%)
Regulated	No	815	(90%)		No	908	(92%)
	Yes	93	(10%)		Yes	82	(8%)
Outside blockholder	No	466	(51%)		No	519	(52%)
	Yes	442	(49%)		Yes	471	(48%)
Correlation (after controlling for firm size)				p-value			p-value
D&O coverage	Cash	0.36		<.0001		0.09	0.0073
Adjusted D&O coverage	Cash	0.36		<.0001		0.09	0.0074

Adjusted coverage = D&O insurance coverage minus premium paid;
Cash = the sum of cash, cash equivalent, and short-term investments;
Total coverage = the sum of D&O insurance coverage after adjusting premium and cash;
Firm size = natural log of total assets at the beginning of current forecast quarter;
Earnings volatility = the absolute value of the difference between realized earnings in the current period and those in the previous period, scaled by the stock price at the end of period t-1 for annual, and t-4 for quarterly periods $= \left| EPS_t - EPS_{t-1(4)} \right| / PRICE_{t-1(4)}$;
Beta- and market-adjusted price change = price change over one year prior to a quarter, adjusted by a firm's beta over 250 trading days and the TSX 300 index $= (P_q - P_{q-1(4)}) - \beta_{250} * (TSX300_q - TSX300_{q-4})$;
Hightech = Pharmaceuticals (SIC codes 2833-2836), R&D Services (8731-8734), Programming (7371-7379), Computers (3570-3577), or Electronics (3600-3674) industries;
Regulated = Telephone (4812-4813), TV (4833), Cable (4841), Communications (4811-4899), Gas (4922-4924), Electricity (4931), Water (4941), or Financial (6021-6023, 6035-6036, 6141, 6311, 6321, 6331) industries;
Outside directors = percentage of outside directors who are not officers of a firm in a board of directors;
Outside blockholder = outside shareholders who own over 10% of a firm's stock.

TABLE 3
Multinomial Logistic Regressions for H1: Forecast Frequency

$$P(CHOICE) = \alpha_0 + \alpha_1 TOTAL + \alpha_2 SIZE + \alpha_3 EVOLATILITY + \alpha_4 PCHANGE + \alpha_5 HIGHTECH + \alpha_6 REGULATED + \alpha_7 OUTSIDE + \alpha_8 DOUTBLOCK + \varepsilon \quad (1)$$

$$P(CHOICE) = \alpha_0 + \alpha_{1a} ADJCOV + \alpha_{1b} CASH + \alpha_2 SIZE + \alpha_3 EVOLATILITY + \alpha_4 PCHANGE + \alpha_5 HIGHTECH + \alpha_6 REGULATED + \alpha_7 OUTSIDE + \alpha_8 DOUTBLOCK + \varepsilon \quad (2)$$

	Model (1)				Model (2)			
	Cross-listed		Locally listed		Cross-listed		Locally listed	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	-1.136	0.16	-0.847	0.43	-1.133	0.17	-1.085	0.30
TOTAL	-0.003	0.01*	-0.015	0.03*				
ADJCOV					0.015	0.17	-0.007	0.64
CASH					-0.005	<.01*	-0.025	0.01*
SIZE	0.110	0.14	0.051	0.70	0.102	0.18	0.113	0.39
EVOLATILITY	-0.231	0.75	-2.884	0.31	-0.256	0.74	-3.072	0.28
PCHANGE	0.000	0.02*	0.000	0.17	0.000	0.01*	0.000	0.18
HIGHTECH	-0.102	0.69	-0.180	0.74	-0.001	0.99	-0.021	0.97
REGULATED	0.215	0.62	-0.236	0.84	0.178	0.68	-0.137	0.91
OUTSIDE	0.250	0.75	0.372	0.76	0.094	0.91	0.241	0.84
DOUTBLOCK	-0.040	0.85	-0.368	0.24	-0.013	0.95	-0.371	0.24
No. of observations	1,153		1,068		1,153		1,068	
Model fitness	Chi-Sq = 344.1 p-value <.01		Chi-Sq = 71.5 p-value <.01		Chi-Sq = 366.9 p-value <.01		Chi-Sq = 85.9 p-value <.01	

* means p-value < 0.05.

CHOICE, making one of the following qualitative choices: good (bad) news if a quantitative forecast is higher (lower) than the market expectation or a qualitative forecast has a positive (negative) message; neutral news if a quantitative forecast equals the expectation or if a qualitative forecast has a neutral message; no news if a firm does not provide any forecast in a quarter;

ADJCOV = D&O insurance coverage limit minus premium paid, scaled by firm size;

CASH = the sum of cash, cash equivalent, and short-term investments, scaled by firm size;

TOTAL = the sum of adjusted D&O insurance coverage and cash, scaled by firm size;

SIZE = natural log of total assets at the beginning of the current forecast quarter;

EVOLATILITY = the absolute value of the difference between realized earnings in the current period and those in the previous period= $\left| EPS_t - EPS_{t-1(4)} \right| / PRICE_{t-1(4)}$;

PCHANGE = price change over one year prior to a quarter, adjusted by a firm's beta over 250 trading days and the TSX 300 index = $(P_q - P_{q-4}) - \beta_{250} * (TSX300_q - TSX300_{q-4})$;

HIGHTECH = 1 if a firm is a member of Pharmaceuticals (SIC codes 2833-2836), R&D Services (8731-8734), Programming (7371-7379), Computers (3570-3577), or Electronics (3600-3674) industries, 0 for others;

REGULATED = 1 if a firm is a member of Telephone (4812-4813), TV (4833), Cable (4841), Communications (4811-4899), Gas (4922-4924), Electricity (4931), Water (4941), or Financial (6021-6023, 6035-6036, 6141, 6311, 6321, 6331) industries, 0 for others;

OUTSIDE = percentage of outside directors in a board of directors;

DOUTBLOCK = 1 when an outside shareholder exists who owns over 10% of a firm's stock, 0 otherwise.

TABLE 4
Ordered Logistic Regressions for H2: Forecast Precision

$$PRECISION = \beta_0 + \beta_1 EXTOTAL + \beta_2 SIZE + \beta_3 EVOLATILITY + \beta_4 PCHANGE + \beta_5 HIGHTECH + \beta_6 REGULATED + \beta_7 OUTSIDE + \beta_8 DOUTBLOCK + \beta_9 HORIZON + \varepsilon \quad (3)$$

$$PRECISION = \beta_0 + \beta_{1a} EXADJCOV + \beta_{1b} EXCASH + \beta_2 SIZE + \beta_3 EVOLATILITY + \beta_4 PCHANGE + \beta_5 HIGHTECH + \beta_6 REGULATED + \beta_7 OUTSIDE + \beta_8 DOUTBLOCK + \beta_9 HORIZON + \varepsilon \quad (4)$$

	Model (3)				Model (4)			
	Cross-listed		Locally listed		Cross-listed		Locally listed	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
EXTOTAL	0.001	0.06	0.001	0.41				
EXADJCOV					-0.001	0.45	0.008	0.26
EXCASH					0.001	0.03*	0.001	0.55
SIZE	-0.376	<.01*	-0.085	0.84	-0.305	0.04*	-0.340	0.49
EVOLATILITY	-3.044	0.21	-13.073	0.40	-3.093	0.21	-12.221	0.43
PCHANGE	0.000	0.74	0.000	0.11	0.000	0.83	-0.001	0.09
HIGHTECH	-1.473	0.00*	1.722	0.18	-1.594	<.01*	1.507	0.24
REGULATED	1.489	0.04*	1.143	0.60	1.809	0.02*	1.579	0.48
OUTSIDE	-1.088	0.46	7.990	0.04*	-1.204	0.41	8.031	0.04*
DOUTBLOCK	0.377	0.32	0.505	0.43	0.477	0.22	0.504	0.44
HORIZON	0.001	0.58	0.006	0.07	0.001	0.54	0.005	0.08
No. of observations	143		48		143		48	
Model fitness	Chi-Sq = 17.6 p-value = 0.04		Chi-Sq = 20.6 p-value = 0.01		Chi-Sq = 19.0 p-value = 0.04		Chi-Sq = 21.7 p-value =0.02	

* means p-value < 0.05.

PRECISION = 3 (2, 1, 0) for point (range, open, other) forecasts;

EXTOTAL = the residual from the regression of the sum of adjusted D&O insurance coverage and cash on firm size.

EXADJCOV = the residual from the regression of adjusted D&O insurance coverage on firm size;

EXCASH = the residual from the regression of the sum of cash on firm size;

SIZE = natural log of total assets at the beginning of forecast quarter;

EVOLATILITY = the absolute value of the difference between realized earnings in the current period and those in the previous period, scaled by stock price at the end of period t-1 for annual and t-4 for quarterly periods= $\left| EPS_t - EPS_{t-1(4)} \right| / PRICE_{t-1(4)}$;

PCHANGE = price change over one year prior to a quarter, adjusted by a firm's beta over 250 trading days and the TSX 300 index = $(P_q - P_{q-4}) - \beta_{250} * (TSX300_q - TSX300_{q-4})$;

HIGHTECH = 1 if a firm is a member of Pharmaceuticals (SIC codes 2833-2836), R&D Services (8731-8734), Programming (7371-7379), Computers (3570-3577), or Electronics (3600-3674) industries, 0 for others;

REGULATED = 1 if a firm is a member of Telephone (4812-4813), TV (4833), Cable (4841), Communications (4811-4899), Gas (4922-4924), Electricity (4931), Water (4941), or Financial (6021-6023, 6035-6036, 6141, 6311, 6321, 6331) industries, 0 for others;

OUTSIDE = percentage of outside directors in a board of directors;

DOUTBLOCK = 1 when an outside shareholder exists who owns over 10% of a firm's stock, 0 otherwise;

HORIZON = the number of calendar days from the forecast date to the period-end.

TABLE 5
Regressions for H3a and H3b using Pre-period-end Horizon

Panel A: Horizon Tests using Excessive Total Coverage

$$HORIZON = \gamma_0 + \gamma_1 SIGN + \gamma_2 EXTOTAL + \gamma_3 SIGN * EXTOTAL + \gamma_4 EVOLATILITY + \gamma_5 PCHANGE + \gamma_6 HIGHTECH + \gamma_7 REGULATED + \gamma_8 OUTSIDE + \gamma_9 DOUTBLOCK + \varepsilon \quad (5)$$

	Cross-listed sample				Locally listed sample			
	Small firms		Large firms		Small firms		Large firms	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	4.083	<.01*	5.750	<.01*	4.377	<.01*	4.056	0.01*
SIGN	0.680	0.00*	0.339	0.04*	0.519	0.18	0.659	0.02*
EXTOTAL	0.001	0.11	-0.001	0.02*	-0.004	0.70	0.002	0.24
SIGN*EXTOTAL	-0.001	0.37	0.000	0.02*	0.007	0.51	-0.001	0.37
EVOLATILITY	4.069	0.01*	1.639	0.09	-1.231	0.48	5.030	0.26
PCHANGE	0.000	0.08	-0.000	<.01*	-0.000	0.06	-0.000	0.02*
HIGHTECH	-0.117	0.60	0.102	0.67	-0.466	0.20	-0.717	0.49
OUTSIDE	0.302	0.67	-1.965	0.01*	0.275	0.74	-0.064	0.97
DOUTBLOCK	-0.219	0.31	0.430	0.01*	-0.535	0.05	0.224	0.33
EXTOTAL + SIGN*EXTOTAL	0.000	0.64	0.000	0.69	0.003	0.64	0.000	0.38
No. of observations	147		146		77		78	
Adjusted R^2	0.16		0.20		0.08		0.15	

Panel B: Horizon Test using Excess Adjusted Coverage and Excess Cash

$$HORIZON = \gamma_0 + \gamma_1 SIGN + \gamma_{2a} EXADJCOV + \gamma_{2b} EXCASH + \gamma_{3a} SIGN * EXADJCOV + \gamma_{3b} SIGN * EXCASH + \gamma_6 EVOLATILITY + \gamma_7 PCHANGE + \gamma_8 HIGHTECH + \gamma_9 REGULATED + \gamma_{10} OUTSIDE + \gamma_{11} DOUTBLOCK + \varepsilon \quad (6)$$

	Cross-listed sample				Locally listed sample			
	Small firms		Large firms		Small firms		Large firms	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept	4.298	<.01*	5.750	<.01*	5.258	<.01*	4.586	<.01*
SIGN	0.382	0.27	0.362	0.04*	-0.001	1.00	0.752	0.03*
EXADJCOV	0.006	0.18	0.000	0.96	0.012	0.69	0.006	0.13
SIGN*EXADJCOV	-0.007	0.21	0.000	0.89	-0.004	0.88	-0.004	0.27
EXCASH	0.001	0.16	-0.001	0.02*	-0.005	0.61	0.001	0.43
SIGN*EXCASH	-0.001	0.45	0.001	0.02*	0.007	0.47	-0.001	0.51
EVOLATILITY	3.856	0.01*	1.620	0.09	-1.463	0.43	4.680	0.29
PCHANGE	0.000	0.11	-0.000	<.01*	-0.000	0.06	-0.000	0.01*
HIGHTECH	-0.098	0.69	0.090	0.72	-0.407	0.29	-0.721	0.49
OUTSIDE	0.305	0.67	-1.994	0.01*	0.018	0.99	-0.895	0.60
DOUTBLOCK	-0.178	0.41	0.428	0.01*	-0.537	0.05	0.216	0.36
EXADJCOV + SIGN*EXADJCOV	-0.0007	0.82	0.0001	0.88	0.0063	0.69	0.001	0.23
EXCASH + SIGN*EXCASH	0.0004	0.63	0.0000	0.68	0.0025	0.71	0.000	0.74

No. of observations	147	146	77	78
Adjusted R^2	0.16	0.19	0.06	0.16

* means p-value < 0.05.

HORIZON = the natural log of the number of calendar days from forecast date to a fiscal period-end;

SIGN = 1(0) if a forecast is good (bad) news whose value is higher (lower) than the market expectation;

EXTOTAL = the residual from the regression of the sum of adjusted D&O insurance coverage and cash on firm size.

EXADJCOV = the residual from the regression of adjusted D&O insurance coverage on firm size;

EXCASH = the residual from the regression of cash on firm size;

SIZE = natural log of total assets at the beginning of current forecast quarter;

EVOLATILITY = the absolute value of the difference between realized earnings in the current period and those in the previous period, scaled by stock price at the end of period t-1 for annual and t-4 for quarterly periods $= \left| EPS_t – EPS_{t-1(4)} \right| / PRICE_{t-1(4)}$;

PCHANGE = price change over one year prior to a quarter, adjusted by a firm's beta over 250 trading days and the TSX 300 index $= (P_q – P_{q-4}) – \beta_{250} * (TSX300_q – TSX300_{q-4})$;

HIGHTECH = 1 if a firm is a member of Pharmaceuticals (SIC codes 2833-2836), R&D Services (8731-8734), Programming (7371-7379), Computers (3570-3577), or Electronics (3600-3674) industries, 0 for others;

REGULATED = 1 if a firm is a member of Telephone (4812-4813), TV (4833), Cable (4841), Communications (4811-4899), Gas (4922-4924), Electricity (4931), Water (4941), or Financial (6021-6023, 6035-6036, 6141, 6311, 6321, 6331) industries, 0 for others;

OUTSIDE = percentage of outside directors in a board of directors;

DOUTBLOCK = 1 when an outside shareholder exists who owns over 10% of a firm's stock, 0 otherwise.

TABLE 6
Regressions of Forecast Deviation on CAR for H5

$$CAR = \theta_0 + \theta_1 RANK + \theta_2 FD + \theta_3 RANK * FD + \varepsilon \quad (9)$$

Panel A: CAR Tests using Ranks by Excess Total Coverage

	Cross-listed sample		Locally listed sample	
	Estimate	p-value	Estimate	p-value
Intercept	-0.023	0.18	-0.006	0.84
RANK	0.050	0.04*	-0.018	0.70
FD	0.145	0.84	0.959	0.37
RANK*FD	-1.114	0.41	-1.729	0.33
FD+RANK*FD	-0.968	0.40	-0.770	0.58
No. of observations	73		24	
Adjusted R^2	0.03		0.02	

Panel B: CAR Tests using Ranks by Excess D&O Insurance Coverage

	Cross-listed sample		Locally listed sample	
	Estimate	p-value	Estimate	p-value
Intercept	-0.021	0.25	-0.055	0.20
RANK	0.039	0.11	0.038	0.54
FD	-3.064	0.05*	1.540	0.30
RANK*FD	3.033	0.08	-1.832	0.41
FD+RANK*FD	-0.031	0.82	-0.292	0.86
No. of observations	71		24	
Adjusted R^2	0.14		-0.09	

Panel C: CAR Tests using Ranks by Excess Cash

	Cross-listed sample		Locally listed sample	
	Estimate	p-value	Estimate	p-value
Intercept	0.005	0.73	-0.010	0.78
RANK	0.022	0.29	-0.025	0.60
FD	-0.332	0.57	0.976	0.39
RANK*FD	-0.637	0.60	-0.884	0.64
FD+RANK*FD	-0.968	0.35	0.092	0.95
No. of observations	74		24	
Adjusted R^2	-0.01		-0.02	

* means p-value < 0.05.

RANK = 1if excess total coverage, excess adjusted coverage, or excess cash falls into the top 25%; 0 if falls into the bottom 25%;

CAR = 3-day window cumulative abnormal returns around the announcement of management forecasts;

FD = the difference between management earnings forecasts and market expectation, scaled by stock price at the beginning of the forecast quarter.

TABLE 7
Additional Tests using Post-period-end Horizon

Panel A: Tests using Excess Total Coverage, Forecast Sign and Unexpected Earnings Sign

$$HORIZON = \gamma_0 + \gamma_{1a}SIGN + \gamma_{1b}UESIGN + \gamma_2 EXTOTAL + \gamma_{3a}SIGN * EXTOTAL + \gamma_{3b}UESIGN * EXTOTAL + \gamma_4 SIZE + \gamma_5 EVOLATILITY + \gamma_6 PCHANGE + \gamma_7 HIGHTECH + \gamma_8 REGULATED + \gamma_9 OUTSIDE + \gamma_{10} DOUTBLOCK + \varepsilon$$

	Cross-listed		Locally listed	
	Estimate	p-value	Estimate	p-value
Intercept	4.872	<.01*	5.345	<.01*
SIGN	0.147	0.02*	0.227	0.02*
UESIGN	-0.151	0.02*	-0.064	0.52
EXTOTAL	0.000	0.06	-0.001	0.29
SIGN*EXTOTAL	-0.000	0.40	0.000	0.79
UESIGN*EXTOTAL	-0.000	0.13	0.001	0.10
SIZE	-0.088	<.01*	-0.131	<.01*
EVOLATILITY	0.484	0.01*	0.983	0.26
PCHANGE	0.000	0.12	0.000	0.37
HIGHTECH	-0.254	<.01*	-0.149	0.29
REGULATE	0.182	0.26	-0.528	0.06
OUTSIDE	-0.710	0.01*	-0.848	0.02*
DOUTBLOCK	-0.019	0.78	-0.043	0.68
EXTOTAL+SIGN*EXTOTAL	0.000	<.01*	-0.001	0.15
EXTOTAL+UESIGN*EXTOTAL	0.000	0.25	0.000	0.90
EXTOTAL+SIGN*EXTOTAL+UESIGN*EXTOTAL	0.000	0.33	0.000	0.46
No. of observations	210		119	
Adjusted R^2	0.20		0.25	

Panel B: Tests using Excess D&O Coverage, Excess Cash, Forecast Sign, and Unexpected Earnings Sign

$$HORIZON = \gamma_0 + \gamma_{1a}SIGN + \gamma_{1b}UESIGN + \gamma_2 EXADJCOV + \gamma_3 EXCASH + \gamma_{2a}SIGN * EXADJCOV + \gamma_{2b}UESIGN * EXADJCOV + \gamma_{3a}SIGN * EXCASH + \gamma_{3b}UESIGN * EXCASH + \gamma_4 SIZE + \gamma_5 EVOLATILITY + \gamma_6 PCHANGE + \gamma_7 HIGHTECH + \gamma_8 REGULATED + \gamma_9 OUTSIDE + \gamma_{10} DOUTBLOCK + \varepsilon$$

	Cross-listed		Locally listed	
	Estimate	p-value	Estimate	p-value
Intercept	4.959	<.01*	4.909	<.01*
SIGN	0.155	0.02*	0.375	<.01*
UESIGN	-0.165	0.01*	-0.015	0.88
EXADJCOV	0.002	0.05*	-0.010	<.01*
SIGN*EXADJCOV	-0.001	0.10	0.008	0.01*
UESIGN*EXADJCOV	-0.001	0.46	0.004	0.09
EXCASH	0.000	0.61	0.002	0.13
SIGN*EXCASH	0.000	0.77	-0.002	0.15
UESIGN*EXCASH	-0.000	0.53	-0.000	0.85
SIZE	-0.093	<.01*	-0.099	0.03*
EVOLATILITY	0.456	0.02*	1.180	0.16
PCHANGE	0.000	0.11	0.000	0.45

HIGHTECH	-0.234	0.01*	-0.231	0.10
REGULATED	0.174	0.29	-0.273	0.40
OUTSIDE	-0.789	<.01*	-0.728	0.03*
DOUTBLOCK	-0.007	0.92	-0.029	0.77
EXADJCOV+SIGN*EXADJCOV	0.000	0.65	-0.002	0.02*
EXADJCOV+UESIGN*EXADJCOV	0.001	0.18	-0.006	0.02*
EXADJCOV+SIGN*EXADJCOV+UESIGN*EXADJCOV	-0.000	0.66	0.003	0.31
EXCASH+SIGN*EXCASH	0.000	0.03*	0.000	0.75
EXCASH+UESIGN*EXCASH	0.000	0.85	0.002	0.11
EXCASH+SIGN*EXCASH+UESIGN*EXCASH	0.000	0.25	0.000	0.93
No. of observations	210		119	
Adjusted R^2	0.20		0.32	

* means p-value < 0.05.

HORIZON = natural log of the number of days between the period-end and the report date;

SIGN = 1(0) if a forecast is good (bad) news and its value is higher (lower) than market expectation;

UESIGN = 1 (0) if the actual earning is good (bad) news and its value is higher (lower) than the expectation;

EXTOTAL = the residual from the regression of the sum of adjusted D&O insurance coverage and cash on firm size;

EXADJCOV = the residual from the regression of adjusted D&O insurance coverage on firm size;

EXCASH = the residual from the regression of cash on firm size;

SIZE = natural log of total assets at the beginning of current forecast quarter;

EVOLATILITY = the absolute value of the difference between realized earnings in the current period and those in the previous period, scaled by stock price at the end of period t-1 for annual and t-4 for quarterly periods $= \left| EPS_t - EPS_{t-1(4)} \right| / PRICE_{t-1(4)}$;

PCHANGE = price change over one year prior to a quarter, adjusted by a firm's beta over 250 trading days and the TSX 300 index = $(P_q - P_{q-4}) - \beta_{250} * (TSX300_q - TSX300_{q-4})$;

HIGHTECH = 1 if a firm is a member of Pharmaceuticals (SIC codes 2833-2836), R&D Services (8731-8734), Programming (7371-7379), Computers (3570-3577), or Electronics (3600-3674) industries, 0 for others;

REGULATED = 1 if a firm is a member of Telephone (4812-4813), TV (4833), Cable (4841), Communications (4811-4899), Gas (4922-4924), Electricity (4931), Water (4941), or Financial industries (6021-6023, 6035-6036, 6141, 6311, 6321, 6331), 0 for others;

OUTSIDE = percentage of outside directors in a board of directors;

DOUTBLOCK = 1 when an outside shareholder exists who owns over 10% of a firm's stock, 0 otherwise.