

The Effect of Litigation Risk on Management Earnings Forecasts

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November, 2005

We thank Tillinghast-Towers Perrin for insurance data. We would like to thank several industry participants who have shared their valuable time with us. In particular, we wish to thank Elissa Sirovatka of Tillinghast, David Allan of General Reinsurance Corporation, Dan Bailey of Bailey Cavalieri LLC, Michael Early and Frank Kastelic of the Chicago Underwriting Group, Lori Fuchs of Honeywell, Phil Norton of Arthur J. Gallagher and Co. and Paul Van Zuiden of Risk Management & Insurance Consulting LLC. We also thank Shyam Sunder, Jake Thomas, Brian Mittendorf, Frank Zhang, Foong-Song Cheong, Ana Albuquerque, Romana Autrey, Daniel Cohen and Partha Mohanram for useful comments. We also thank Heowk Kiat Koh for assistance with data collection. Any residual errors are our own. Corresponding author: Gans Narayanamoorthy, Yale School of Management, 135 Prospect Street, Box 208200, New Haven, CT 06520-8200, ph: 203 432 5787, ganapathi@yale.edu.

Abstract

We examine the effect of litigation risk on managers' decision to issue earnings forecasts. We have chosen a novel measure that readily gives us a true *ex-ante* measure of litigation risk viz. the Directors and Officers liability insurance premiums. This choice bypasses significant problems associated with the choice of the estimation of the litigation risk equation in prior studies. We find that, when faced with ex-ante litigation risk, managers with bad news are more likely to issue an earnings warning. For good news firms, we do not see this effect. We also look at three forecast characteristics: viz. forecast horizon, forecast precision and extent of news revealed. We find that, companies, when faced with litigation risk, are imprecise with good news forecasts and very precise when they make bad news forecasts. The extent of news revealed in the forecast appears to decrease in litigation risk. Forecast horizon does not appear to vary significantly with litigation risk.

1. Introduction

A company facing litigation experiences a significant drop in value. Bhagat et al. (1998) present large sample evidence that on the date a lawsuit is filed, corporate defendants lose nearly one percent of their value. For any filing pertaining to violation of securities laws, the losses are much higher with companies losing about 2.73% of their value, on average, at the filing date. Aside from the direct costs faced by companies, managers also face indirect costs of litigation. Managers suffer significant reputational costs when their firms get sued. Strahan (1998) finds that the probability of CEO turnover increases dramatically after class action filings.

Among these costly lawsuits, inadequate and inaccurate disclosure was most frequently at issue in shareholder claims (2002 Tillinghast-Towers Perrin survey). The survey adds:

Disclosures of publicly traded companies are an area of increased underwriting concern due to the significantly higher cost of Directors and Officers' liability claims ... such claims relate to securities trading decisions that led to financial loss, which were made on the basis of allegedly inadequate or inaccurate disclosure by the corporation.

Given the above facts, it is clear that managers have strong incentives to modify their behavior to avoid costly litigation pertaining to inadequate or inaccurate disclosure. Several studies have discussed the effect of litigation risk on disclosure. Lev (1992) and Skinner (1994) suggest that voluntarily disclosing an earnings surprise can potentially decrease the probability of a lawsuit. The likelihood of getting sued decreases with early disclosure by the company since it weakens the claim that managers failed to disclose information promptly (Skinner, 1994). The likelihood also decreases since timely disclosure can lead to lower potential claims. This is because the class period for alleged damages ends on the date of the disclosure (Skinner, 1997). This incentive to disclose early has to be balanced against the costs of early disclosure. For example, besides the direct costs of disclosure, there can be indirect costs like revealing proprietary information (Dye, 1986; Verrecchia, 1983).

A typical study of the effect of litigation risk on disclosure estimates a two-stage model. In the first stage, a litigation risk prediction model (the dependent variable indicates whether the firm got sued *ex post*) is estimated. Then, the predicted values of the probability of getting sued are plugged into a second stage model of voluntary disclosure. Such a study has three potential problems: self-selection, in-sample tests and an inappropriate choice of the first stage dependent variable.

1. Self-selection: the use of a measure of ex-post litigation risk

There are self-selection biases in using *ex-post* litigation data. High risk firms that, with their actions, successfully avoided litigation are erroneously treated as low risk firms. This error can yield spurious results in the litigation risk prediction model. The problem is exacerbated in testing the relation between litigation risk and disclosure since one of the actions firms can take to avoid litigation is the disclosure decision itself. This latter endogeneity problem was pointed out by Skinner (1997) and is at the heart of Field et al. (2005)'s analysis.

2. In-sample tests

Usually the first and second stage models are estimated using the same data. For example, Brown et al. (2005) estimate a logistic model of the probability of getting sued for firm quarters between 1996 and 2002. They use the fitted values from this model in a regression of voluntary disclosure for the period 1996 to 2002 and conclude that the probability of litigation affects management's decision to issue earnings forecasts. Such an approach faces the obvious criticism that it assumes the managers knew the litigation risk model pertaining to 2002, when they made their management forecast decisions in 1996. A possible solution to this criticism is that the second stage model should encompass a time period different from the first stage. However, that solution is also not perfect. The litigation environment a company operates in is dynamically changing and evolving. There are legislative changes, changes in the performance of the economy, changes in the way judges adjudicate and

create precedence, changes in shareholder activism including but not limited to institutional activism etc. The dynamic nature of the litigation environment can be seen from Tillinghast Survey 2002 which reports that, in 1991 less than 19% of all shareholder initiated claims were disclosure related. This changed in 2002 to nearly 50%. A related problem is that a lawsuit is a relatively low probability event. For example, in the Brown et al. (2005) sample, over a seven year period, there were only 972 firm quarters with a lawsuit and there were 128,269 firm-quarters without a lawsuit.¹ Lawsuit, being a low probability event, necessitates the use of a long enough estimation period in the first stage.

3. Incorrect dependent variable in the first stage

Most studies that use actual lawsuits to estimate litigation likelihood ignore lawsuits filed in state courts. This can cause an underestimation of the actual litigation risk of a company. Grundfest and Perino (1997) report an increase in the number of lawsuits emerging in state courts after the passage of the Private Securities Litigation Reform Act, 1995. Most of the precedent-setting decisions regarding shareholder lawsuits have been taken by the judges in the state courts (especially, Delaware).² Besides not considering lawsuits in state courts, treating all firms that got sued as equal treats frivolous and serious claims the same, potentially leading to incorrect estimation of the litigation risk model. An example of this effect can be seen in Field et al. (2005), where their preliminary results change when all ex-post dismissed claims are removed from their sample.

In this paper, we use a particular measure of *ex-ante* litigation risk viz. the Directors and Officers' (D&O)³ Liability Insurance premium. Being an *ex-ante* measure, it does not suffer from the self-selection problem discussed earlier. It also dispenses with the need for a first-stage estimation of litigation risk and all its associated problems like

¹ It was also a little counter-intuitive that the same firm was treated as high litigation risk in the quarter it was sued and as low risk in the adjoining quarters.

² Comments of Harvey Pitt, former chairman of the Securities and Exchange Commission, at the Yale Law School (November 2005).

³ Hereafter referred to as D&O.

in-sample estimation, event with low probability etc. Finally, D&O insurance premiums, *ex-ante*, should be able to differentiate between frivolous and serious claims. Despite the clear advantages, not many studies use D&O insurance variables due to non-availability of firm-level data.

The use of D&O insurance premium, for all its advantages, is itself not without caveats. D&O insurance covers all types of claims, not just disclosure related shareholder initiated ones, even though such claims are the largest and most frequent. Additionally, the premium depends on the insurance limits chosen⁴. As such, we need to tease out the effect of any excess limit on the insurance premium before using the premium as an *ex-ante* measure of litigation risk (Cao and Narayanamoorthy, 2005).

A possible criticism of the use of the D&O insurance premium as a proxy for litigation risk is that managers' disclosure decisions themselves can be affected by whether they have insurance or not. As pointed out later, however, more than 99% of publicly listed firms in the Tillinghast Survey have D&O insurance. As such, the taking or not of D&O insurance does not appear to be a decision variable for managers anymore.

We use management's earnings forecasts as the measure of voluntary disclosure. Most of the prior literature focuses on how management's forecasts affect future litigation and/or settlements (Francis et al., 1994; Skinner, 1997; Field et al., 2004). We focus on the opposite effect viz. the effect of *ex-ante* litigation risk on management's earnings forecasts. Similar to Brown et al. (2005), we analyze the effect of litigation risk on the likelihood of issuing a forecast and on management's choice of three forecast characteristics: precision, horizon and the amount of earnings news released in the forecast.

⁴ There is almost no variation in the deductible.

We find that managers with bad news, facing ex-ante litigation risk, are more likely to issue an earnings warning. To our knowledge, we are the first to empirically document this association. In contrast to the bad news firms, firms with good news are not likely to disclose early through an earnings forecast. We also look at three forecast characteristics: viz. forecast horizon, forecast precision and extent of news revealed. We find that, companies, when faced with litigation risk, are imprecise with good news forecasts and very precise when they make bad news forecasts. When facing litigation risk, managers appear to be releasing less information in their forecast. Forecast horizon does not appear to vary significantly with litigation risk.

The findings are consistent with the results in Baginski et al. (2002) who find that Canadian firms, who operate in a different litigation regime and hence face lower risk, disclose differently than American firms. They are also consistent with the results in Johnson et al. (2001) who show that voluntary disclosure behavior changed when the litigation environment in the US changed with the passage of the Private Securities Litigation Reform Act, 1995.

This study is part of a broader collection of studies investigating the determinants of disclosure like size, growth, financing, analyst following and stock based compensation (Lang and Lundholm, 1993; Frankel et al. 1995; Soffer et al., 2000; Nagar et al. 2003).

The remaining sections proceed as follows. Section two describes D & O Insurance. Section three discusses the hypotheses development and the econometric model. Section four discusses the empirical results and Section five concludes.

2. What is D&O Liability Insurance?

In its 2002 annual executive summary on the state of the D&O insurance market, Tillinghast reports that “approximately 19% of U.S. survey respondents reported one

or more claims against their directors or officers over a ten-year experience period.” Most companies like to reimburse their directors and senior officers for defense costs and settlements arising from successful claims that target their actions (or inactions) with respect to the company. Besides *ex-post* protecting the directors and officers for decisions they take in good faith, from an *ex-ante* perspective, this policy is useful in attracting talented directors and officers to the company. To cover the monetary costs of the lawsuits, companies typically purchase Directors and Officers Liability Insurance. The insurance provides coverage if a claim is settled with no admission of bad faith by the director or there is no finding of bad faith by the court.

A typical D&O insurance policy combines up to three types of insurance coverage⁵:

- A. Personal Coverage, which provides direct payment to directors and officers when a firm is unable or unwilling to indemnify them.⁶
- B. Corporate Reimbursement Coverage, which reimburses the company when it indemnifies directors and officers for the costs of defending the lawsuits.
- C. Entity Coverage, available for many years to nonprofits and in recent years to for-profit companies, encompassing at least some claims against the organization directly, including those that name no individual insureds.

The annual premium paid by the company for a D & O policy covers claims made in the year of coverage up to the annual policy limit and subject to any deductible / retention. The personal and corporate coverage limits are usually the same. Entity Coverage carries a separate premium and retention. Usually personal coverage

⁵ This description of a typical D&O Insurance policy draws heavily on the Tillinghast 2002 D&O survey report and Core (2000).

⁶ US law allows indemnification against most claims. However, defense costs in certain shareholder derivative lawsuits where the D & O's are sued on behalf of the firm are not indemnifiable. Additionally firms may be unable to bear the costs due to financial distress.

deductible is zero and the corporate coverage portion carries a deductible of two percent of the limit.

Core (2000) argues that the D & O insurance application is structured to enable the insurer to obtain full information about the applicant's risk factors at negligible cost. Knepper and Bailey (1998) report that, besides a detailed written application detailing past and future business activities, litigation experience and biographical data on directors and officers, the D & O Insurance premium decision is made after the insurer conducts background checks on the directors and officers. If the firm withholds information at this stage, the insurance company can use the omission to deny coverage if there is a claim. These features indicate that the insurer and the insured share similar beliefs about the firm's litigation risk when the premiums are decided. When one of the D & Os intentionally misrepresents a known risk of a suit while applying for the policy, the insurer can refuse coverage to the director or officer who misrepresented. However, per the severability provisions in place, usually, under U.S. law, the insurer must continue to extend coverage to the innocent D & Os.

For a sample of Canadian firms, Core (1997) identifies the determinants of whether a company takes out a D & O insurance policy or not. The Tillinghast annual survey for 2002 reports that more than 97% of US firms take a D & O policy. This has gone to over 99% in 2004. As such, not taking a D & O insurance policy does not appear to be an option anymore.

Unlike the 1980s, the current market for D & O insurance is very liquid with several underwriters. The 2002 Tillinghast annual survey identifies five underwriters with at least 8% of the D&O insurance market by premium and ten underwriters with at least 2% of the market. In 2002, Arthur J Gallagher, a leading D & O insurance broker

estimated that there were at least 47 underwriters competing in the marketplace.⁷ These statistics point to the insurance pricing being reasonably efficient.

3. Hypotheses Development and Econometric Model

We first discuss the implications of litigation risk for management's earnings forecasts. Then we discuss how we tease out the effect of excess limit on D&O premiums.

The effect of litigation risk on management earnings forecasts

Institutional arrangements penalize managers *ex-post* for actions contrary to shareholder interests. Specifically, the stock exchanges require firms to immediately disclose any information expected to have a material effect on their stock prices. The anti-fraud provisions of the federal securities law provide substance to stock exchanges' timely disclosure rules. In particular, Rule 10b-5 of the Securities and Exchange Act of 1934 establishes liability for fraudulent practices in securities transactions. The scope of actionable conduct under this rule includes:(3) disclosure misrepresentation, either overtly or in certain circumstances in maintaining silence (King et al., 1990). This part of the rule is the one most likely to affect management's forecasts.

Besides litigation, managers have other incentives like reputation (Tucker, 2004) and contracting between managers and shareholders (Watts and Zimmerman, 1986) that influence their disclosure decisions. Additionally, there are other costs of voluntary disclosure like the release of proprietary information (Verrecchia, 1983; Dye, 1985). These incentives are likely to be relatively less dynamic than the litigation environment. We control for these additional incentives by using the lagged measure of the disclosure variable. Firms' disclosure decisions tend to be sticky (Field et. al,

⁷ The buyer's perception of D & O realities and latest trends, speech by Philip Norton, Arthur J Gallagher & Co., Tillinghast Executive Seminar 2004.

2005) and are likely a result of decisions based on all these incentives. As such, Field et al. (2005) argue that lagged disclosure is unlikely to affect a firm's current litigation risk. Cao and Narayanamoorthy (2005) provide empirical evidence confirming the Field et al. (2005) argument.

Similar to Brown et al. (2005), we analyze the effect of litigation risk on the likelihood of issuing a forecast and on management's choice on three forecast characteristics: precision, horizon and the amount of earnings news released in the forecast.

We develop our hypotheses regarding the forecasts by relying on the framework proposed by King et al. (1990). In the King et al. (1990) framework, the decision to issue a forecast or not is a stage A decision. The choice of public or selective disclosure is a stage B decision and is no longer an issue after the promulgation of Regulation Fair Disclosure (Reg FD) which severely restricts selective disclosure. The characteristics of the forecast are stage C decisions. It is pertinent to note that there is self-selection in the stage C decision. The characteristics of forecasts are a relevant variable only for firms that choose to make a forecast. We explicitly control for this self-selection by including the inverse Mills ratio estimated from the Stage A choice in the regressions.

The effect of litigation risk on the likelihood of issuing a forecast

The likelihood of issuing an earnings forecast depends on whether the forecast contains good news or bad news relative to the market's expectation. For better or worse, the litigation risk faced by managers is overwhelmingly asymmetric to whether the forecast has good news or bad news. Prior research has documented that litigations alleging non-disclosure of bad news far outweigh those alleging non-disclosure of good news (Palmiter, 2002). Thus, if the managers have bad news, they are more likely to voluntarily disclose this information via an earnings forecast. This

can reduce the likelihood that they are sued for not releasing the information in a timely fashion (Francis et al., 1994; Skinner, 1994). The voluntary disclosure can also reduce the expected settlement amount or damage award in the event of a successful lawsuit because the release of the information marks the end of the class period used to compute damages (Skinner, 1997). If the forecast is going to be good news, there is a possibility that it could initiate a lawsuit if subsequently the forecast turns out to have been optimistic. This indicates that the likelihood of a good news management forecast is lower when firms are faced with greater litigation risk.

The effect of litigation risk on the proportion of earnings news to disclose

As discussed above, disclosing all bad news promptly likely reduces the litigation probability by preempting allegations of untimely disclosures and by reducing the settlement amounts in the event of a successful lawsuit. This implies that, when faced with litigation risk, firms are likely to disclose all bad news promptly. Consistent with this story, Soffer et al. (2000) find that bad news pre-announcements contain almost all the firms' bad news. However, it is also known that sharp stock price drops trigger lawsuits. Gradual release of bad news can potentially ease the negative shock to the stock price and argues against complete release of all bad news. Which of these effects dominates is an empirical question. On the other hand, complete release of a good news forecast leaves the possibility of a lawsuit in the event of *ex-post* inability to meet forecasts. Thus, when faced with litigation risk, managers have incentives to only partially release the good news.

The effect of litigation risk on the forecast horizon

As discussed earlier, firms with bad news forecasts have incentives to disclose earlier (thereby increasing forecast horizon) to avoid subsequent lawsuits alleging untimely disclosures and to avoid costly settlements. Disclosing bad news early preempts allegations that managers withheld negative information (Skinner (1997)).

Additionally, the class period in a lawsuit typically ends on the news release date

(Francis et al., 1994; Skinner, 1997), thereby decreasing potential liability. On the flip side, both good and bad news forecasts have a greater chance of actually turning out optimistic with longer horizons since uncertainty increases with horizon. Thus, we expect good news forecast horizon to decrease with litigation risk and suggest that it is an empirical question whether bad news forecast horizons increase or decrease with litigation risk.

The effect of litigation risk on the forecast precision

A more precise forecast for both good and bad news can open the door to subsequent litigation if the forecast turns out *ex-post* optimistic⁸. However, a more precise forecast for bad news can bolster the firm's defense that it did not deliberately withheld information. As such, Brown et al. (2005) argue that the effect of litigation risk on forecast precision is ambiguous when firms have bad news. Based on the above argument, we do expect firms to be more precise with bad news than with good news.

Ex-ante Litigation risk

We use a two-stage model similar to Core (2000) and Cao and Narayanamoorthy (2005). It is pertinent to point out that this two-stage model yields consistent estimates only under the assumption that there is no information asymmetry between insurers and managers.⁹ As discussed in Section two, given the extensive scrutiny of the company and its directors and officers at every insurance renewal, it is not unreasonable to assume no asymmetry between the company and the insurance carrier. Alexander (1991) also argues that D&O policies typically contain exclusions for active and deliberate dishonesty and improper personal benefit that protect the insurer from adverse information asymmetry.

⁸ See Hughes and Pae (2004), Hutton et al. (2003) and Skinner (1994)

⁹ For a detailed discussion of this point, see Core (2000)

There are some obvious exceptions to this assumption. For example, Chalmers et al. (2002) report that typically there are huge increases in insurance limits (or coverage is initiated) and premiums around the time a company makes an IPO. It is possible that, at this time, there may be some information asymmetries. As described later, we have exercised caution in eliminating companies with potential information asymmetries.

Cao and Narayanamoorthy (2005), while investigating the determinants of litigation risk estimate a two stage model. Following that study, we write the following equation for the insurance premium:

$$Premium = f(\text{limit}, \text{deductible}, \text{litigation risk})$$

Deductible for personal coverage is largely zero and is usually two percent of the limit on the corporate coverage portion. The absence of a menu of deductible options reinforces our belief that information asymmetries in this business are limited.

Since the above equation without the deductible is multiplicative, we estimate it in logarithmic form. Thus, we have

$$\text{Log}(\text{premium}) = a_0 + a_1 \text{ Litigation Risk} + a_2 \log(\text{limit}) + \text{err} \quad (1)$$

When purchasing the D&O insurance, typically firms first choose the limit amount based on the litigation risk they face and then pay the corresponding premium agreed with the insurance company. Hence, we can rewrite (1) as follows:

$$\text{Log}(\text{limit}) = b_0 + b_1 \text{ Litigation Risk} + x\text{limit} \quad (2)$$

where $x\text{limit}$ is the excess limit and is the residual in equation (2).

Substituting (2) in (1) yields

$$\text{Log}(\text{premium}) = a_0 + b_0 a_2 + (a_1 + b_1 a_2) \text{ Litigation Risk} + a_2 x\text{limit} + \text{err} \quad (3)$$

which is estimated in its reduced form as:

$$\text{Log}(\text{premium}) = c_0 + c_1 \text{Litigation Risk} + c_2 \text{xlimit} + \text{err} \quad (4)$$

From equation (4), we see that, in order to use the insurance premium as a litigation risk proxy, we also need to include the excess limit variable, *xlimit*, as a control variable.

We do deviate from the approach in the Cao and Narayanamoorthy (2005) study in one way. That study shows that risk variables related to quality of accounting are a significant determinant of litigation risk. However, one can argue against inclusion of accounting related litigation risk in a study of voluntary disclosure since it is not clear that accounting irregularity related risks are relevant variables that are likely to influence managers' disclosure choices (Field et al., 2005). In that case, the correct approach would be to include the accounting quality risk variables in both equation 2 and equation 4. We show that our base case results are robust to this alternative specification. We have not included the quality of earnings in the limit regression to determine *xlimit* in tests of forecast characteristics since use of accounting quality risk variables like the Dechow and Dichev (2003) quality of earnings measure requires accounting data over a long time period and significantly reduces our sample size.

Econometric model

The econometric specification for the management earnings forecast model is:

$$\text{MEF} = d_0 + d_1 \text{Log}(\text{premium}) + d_2 \text{xlimit} + d_3 \text{lagMEF} + \text{err} \quad (5)$$

MEF is a dummy variable that equals one if there is at least one management earnings forecast in the year covered by the insurance contract (may be an annual or

quarterly forecast). *LagMEF* is the value of MEF in the prior year and is used as a control for all non-litigation risk related determinants of management earnings forecasts. We also estimate specific versions of equation (5) for good and bad news separately as follows.

$$MEF_{goodnews} = d_0 + d_1 \text{Log}(\text{premium}) + d_2 \text{xlimit} + d_3 \text{lagMEF} + \text{err} \quad (5a)$$

$$MEF_{badnews} = d_0 + d_1 \text{Log}(\text{premium}) + d_2 \text{xlimit} + d_3 \text{lagMEF} + \text{err} \quad (5b)$$

Where $MEF_{goodnews}$ ($MEF_{badnews}$) is defined as an indicator variable for whether a firm made at least one good-news (bad-news) earnings forecast for the year covered by the insurance contract.

The econometric model for forecast characteristics is

$$MEFC = d_0 + d_1 \text{Log}(\text{premium}) + d_2 \text{goodnews} + d_3 \text{goodnews} * \text{Log}(\text{premium}) + d_4 \text{lagMEFC} + d_5 \text{lagMEFC} * \text{lagMEFCdummy} + d_6 \text{lagMEFCdummy} + d_7 \text{xlimit} + d_8 \text{mills} + d_9 \text{d_annual} + \text{err} \quad (6)$$

MEFC is the management earnings forecast characteristic (horizon, precision or extent of earnings news disclosed) for each forecast (may be an annual or quarterly forecast). *LagMEFC* is the average characteristic of a forecast made in the preceding year regarding a similar fiscal period end (annual or quarterly) and *lagMEFCdummy* takes the value of one when there is a lagged forecast available regarding the corresponding fiscal period end (annual or quarterly) in the previous year. The two lag variables are used as controls for all non-litigation risk related determinants of management earnings forecasts. *Goodnews* is a dummy variable that equals one if First Call characterized the forecast as a positive earnings surprise and zero otherwise. *Mills* is the inverse mills ratio computed from a probit regression of the likelihood of issuing a forecast on litigation risk and *d_annual* is a dummy variable if the forecast is for annual earnings and zero for interim earnings. A positive coefficient on *log_premium* will suggest that the forecast characteristic is increasing with litigation risk for bad news forecasts. A positive coefficient on *log_premium * good news* will

suggest that the forecast characteristic is increasing with litigation risk even more for good firms than bad firms.

In terms of the forecast characteristics, *horizon* is defined as the days between the forecast date and the actual report date. *Precision* is defined as an indicator variable for whether the forecast is quantitative (point, range or bound estimates). To measure the news amount released in a forecast, *fcst_diff_abs* is defined as the absolute value of the difference between forecast value (the point estimate or the mean of a range estimate) and I/B/E/S consensus estimate. This variable is used as a dependent variable while controlling for *act_diff_abs*, the absolute value of the difference between actual reported earnings and I/B/E/S consensus estimate, in the regression.¹⁰

4. Empirical Results

The insurance limits and premium data is from Tillinghast-Towers Perrin. The Investor Responsibility Research Center (IRRC) Directors database is our source for most of the corporate governance data. We have also augmented our sample by hand collecting some corporate governance data from the proxy statements. We obtained stock return data from CRSP, institutional shareholding and management earnings forecasts data from Thomson Financial and accounting data from Compustat. Due to confidentiality reasons, Tillinghast has withheld the names of the respondents. However, since we were furnished with data on revenues, assets, number of employees, state of domicile and 2-digit SIC codes, we came up with a matching

¹⁰ Brown et. al (2005) measure the “news amount revealed” as the difference between forecast value and consensus estimate, scaled by the difference between actual reported earnings and consensus estimate. Our original intent was also to use the ratio of these variables as a proxy for the extent of earnings news released, but we realized that the ratio becomes indeterminable when the denominator was zero, a rather frequent occurrence. As such, we included *act_diff_abs* as a control variable instead of it being the denominator in a ratio.

algorithm to identify respondents.¹¹ Tillinghast surveys 2001 and 2002 cover 3169 firms, among which 1236 are repeated respondents. Table 1 describes our sample selection. After excluding non-publicly-traded, non-US and financial firms, we get an initial sample of 552 firms. Our matching algorithm that incorporates matching criteria on assets range, revenue range, number of employees, state code, 2-digit SIC code, year in business and after-tax loss (all of which are reported by the Tillinghast survey) yielded a matched sample of 323 firms. We exclude firms that offered an IPO in the previous year. This is to reduce the incidence of any information asymmetry between the insurance carrier and the company as documented by Chalmers et. al (2002). Data availability constraints (CRSP, Compustat, IRRC directors database, hand collections, Thomson Financial), further reduced the sample to 212 firms which issued 780 forecasts. For our tests on the extent of news released in the forecast, the sample is further reduced to 580 observations.

Appendix I gives the variable definitions and Table 2 gives the summary statistics of the variables used in the study. Panel A presents the statistics for D&O insurance limit and premium, earnings forecast frequencies and other firm characteristics. The median and mean of the limit amount is \$20 million and \$37.44 million, respectively, with a standard deviation of 46.41. The mean (median) size of the company, as measured by total assets, is \$317.35 million (\$232.76 million)¹². 57% of the 315 firm-years contain at least one management earnings forecast. 17% (55%) of the firm-years contain at least one good-news (bad-news) forecast. For the 780 forecasts made by 128 firms, the median forecast horizon is 99 days and 95% of them are quantitative forecasts. 48% of them are annual earnings forecasts. A subset of 580 forecasts with data available is used to compute the difference between management forecast and consensus estimate. The absolute value of this difference, *fcast_diff_abs*, is used as a

¹¹ Please contact the authors if you would like details about matching criteria. In accordance with our Data License Agreement with Tillinghast, we would like to add the following disclaimer: Tillinghast has not furnished the names of the respondents to their survey. The accuracy of the results depends on our ability to identify firms correctly.

¹² Table 2 reports the descriptive statistics for size, which is measured as the logarithm of total assets

proxy for the extent of earnings news released with the difference between actual earnings and consensus estimate, *act_diff_abs*, used as a control. The mean (median) of *fcast_diff_abs* is \$0.20 (\$0.05) and the mean (median) of *act_diff_abs* is \$0.15 (\$0.06).

Table 3 reports the results of estimating the limit equation (eq. (2)). The litigation risk variables used are *cumret*, the cumulative abnormal returns (based on CRSP weighted index) for the previous year; *ceo_cob*, a dummy variable taking on the value of one if the Chief Executive Officer (CEO) is also Chairman of the Board and zero otherwise; *log_ceo_exp*, natural logarithm of the number of years the CEO has served on the board plus one; *dir_out*, the number of outside directors as a percentage of total number of directors; *dir_out_app*, the percentage of outside directors that start service on the board after the CEO joins the board; *ins_value*, the percentage of inside directors' shareholding; *inst_block10*, an indicator for whether there is at least one institutional investor with shareholdings greater than ten percent; *prior_claim*, a dummy variable taking on the value of one if the company had any D&O claims in the past ten years and zero otherwise; *risk_ind*, a dummy variable taking on the value of one for all high risk industries identified in Francis et al. (1994); *size*, the natural logarithm of total assets in millions; *turnover*, the average daily volume of shares traded as a percent of total shares outstanding for the previous year; *vol*, the standard deviation of daily stock returns for the previous year; and *lev*, total debt (debt in current liabilities plus long-term debt) as a percentage of total assets

Table 3 shows that *cumret*, *size*, *dir_out_app*, *ceo_cob* and *log_ceo_exp* are significantly positive, suggesting that firms choose higher limits if past returns are high, if they are larger, if the chairman of the board and the CEO are the same and if more outsiders have been appointed during the CEO's tenure on the board and choose less insurance limit if the CEO has had a long tenure on the board.

Table 4 presents the results of the logistic estimation of the likelihood of issuing all forecasts, good news forecasts and bad news forecasts. The litigation risk variable is *log_premium*. *Xlimit* is the control for excess limit. In panel A, the dependent variable is *dfcast*, which is an indicator variable taking on the value of one if any earnings forecasts were made for the year and zero otherwise. The year computation begins on the first day of the quarter when the insurance contract becomes effective. In panel B, the dependent variable is *dgoodnews*, which is a dummy variable that takes on a value of one when at least one good news forecast has been made for the year and zero otherwise. If First Call codes the forecast as a positive earnings surprise, we call it a good-news forecast; otherwise we call it a bad-news forecast. The dependent variable in panel C is *dbadnews*, which is a dummy variable that equals one if at least one bad news forecast has been made for the year. Model 1 estimates the effect of litigation risk on the likelihood of making a forecast without controlling for other incentives to disclose (or not disclose) like proprietary costs. The coefficient on *log_premium* is positive and significant in all three panels, although it is largest for bad news (Panel C). Model 2 controls for the other incentives by including the lagged value of *dfcast* in the regression. The coefficient on *log_premium* in panel A (with dependent variable being *dfcast*) is positive at 0.22, but insignificant. In panel B (with dependent variable being *dgoodnews*), it is even smaller at 0.12. However, in panel C (dependent variable being *dbadnews*), it is the largest of the three panels at 0.34 and is significant.

In Model 3 of panels B and C, we estimate equations 5a and 5b with controls for the extent of good news and bad news, respectively, by including the variables *neps_chg_pos* and *neps_chg_neg*. These variables are computed as the number of positive and negative seasonal changes, respectively, in quarterly earnings in the year pertaining to the insurance contract. The results are virtually unchanged with the inclusion of these additional controls.

In Model 4 of panels B and C, we check the robustness of our results by considering an alternative definition of good and bad news. We estimate the abnormal return in a 3-day window around the earnings forecast. The event window starts two days before the forecast and ends on the day of the forecast. The abnormal return around each forecast is computed by subtracting the value weighted market return from the firm's raw return. If the abnormal return is positive, we label it good news, otherwise, we label it bad news. Then *dgoodnews* and *dbadnews* are defined similar to Models 1 and 2. The coefficient on *log_premium* is only significant in Panel C and is positive, confirming the results in Models 1 and 2.

In Model 5 of panels B and C, we control for accounting risk by including the Dechow-Dichev "quality of earnings" variable, *sresid*. For this particular model, we also include *sresid* in the limit regression used to estimate *xlimit* (Table 3). The details of the estimation of *sresid* have been presented in Appendix II. As discussed in the previous section, the exhaustive accounting data required to compute *sresid* reduced our sample to almost half the original sample. The coefficient on *log_premium* in Panel B is negative and significant. The coefficient on bad news is positive, confirming that the likelihood of a bad news forecast is much higher when firms face litigation risk even in this specification. The M.eff. column lists the marginal effect of the coefficient. An M.eff of 0.16 for *log_premium* in model 5 panel C indicates that if premium (and hence litigation risk) increases by 25% (*log_premium* increases by 0.23), then the likelihood of a forecast increases by 0.23 times 0.16, which yields about four percent. To our knowledge, this is the first clear evidence that, as predicted, firms are more likely to issue bad news forecasts when faced with greater litigation risk.

Table 5 presents the logistic regression estimates of the characteristics of the forecasts issued. The specification is eq. (6) discussed in the previous section. As discussed there, these characteristics are relevant only if the managers make the decision to issue the forecast. This self-selection bias is corrected by including the inverse Mills

ratio from a probit model of the likelihood of issuing management earnings forecasts similar to Model 2 in Panel A of Table 4.

In panel A of Table 5, the dependent variable is forecast horizon, defined as the days between the forecast date and the actual report date. The positive coefficient on *d_annual* is the expected result that forecasts for annual earnings have greater horizon than forecasts for interim earnings. The significant coefficient on *mills* shows the importance of correcting for self-selection. The coefficient on *log_premium* is negative, which suggests that bad news forecasts are released later with higher litigation risk. However, the coefficient is insignificant. The coefficient on *goodnews* is significant, which indicates that, absent concerns about litigation risk, managers, based on their other incentives to disclose, will release the good news earlier. The positive coefficient on *goodnews*log_premium* is a little surprising even though it is very insignificant. We suspect this is a result of our three forecast characteristics being jointly determined. It is possible firms release good news forecasts earlier, but are imprecise about these forecasts. We plan to address the issue of joint determination in a future study.

Panel B of Table 5 presents the results for the precision characteristic. Again, the coefficient on *mills* is significant showing the importance of correcting for self-selection. The coefficient on *log_premium* at 0.68 is positive and significant. This strongly suggests that, as predicted, bad news forecasts are more precise with increasing litigation risk. The coefficient on *good news * log_premium* at -1.69 is negative and significant. This implies that, as hypothesized, good news firms (relative to bad news firms) faced with greater litigation risk would rather issue imprecise forecasts.

Panel C presents the results for the extent of earnings news revealed in the forecast. Consistent with our expectation, we find the coefficient on *act_diff_abs* to be positive. The coefficient on *log_premium* is negative, implying that less earnings news gets

released in a forecast when firms face higher litigation risk. The coefficient on *goodnews*log_premium* is negative, indicating that even less news gets released in the forecast if the news is good. This coefficient is, however, insignificant.

5. Conclusion

We examine the effect of litigation risk on the managers' decision to issue earnings forecasts. Prior research typically uses a two-stage estimation procedure to address this research question. In the first stage, they estimate a litigation probability model by using ex-post realizations of lawsuits. Then, they use predicted values from the first stage regression in a second stage regression of management earnings forecasts. Such an approach has three problems: self-selection bias, in sample tests and an inappropriate choice of dependent variable. We have chosen a novel measure that readily gives us a true ex-ante measure of litigation risk viz. the Directors and Officers liability insurance premiums. This choice bypasses the problems mentioned above.

We find that, when faced with *ex-ante* litigation risk, managers with bad news are more likely to issue an earnings warning. For firms with good news, we do not see this effect. We also look at three forecast characteristics: viz. forecast horizon, forecast precision and extent of news revealed. We find that, companies, when faced with litigation risk, are imprecise with good news forecasts and very precise when they make bad news forecasts. Managers facing litigation risk appear to be releasing less information in their forecasts. Forecast horizon does not appear to vary significantly with litigation risk.

We have not considered the interaction between the forecast characteristics. It is possible that all forecast characteristics are jointly determined. We plan to address the simultaneity of forecast characteristics in a future study.

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Appendix I: Variable Definition

Variables	Definition	Data Source
totlim	total annual D&O insurance coverage limit (\$Millions)	Tillinghast
totprem	total annual D&O insurance premium (\$Millions)	Tillinghast
log_limit	logarithm of the D&O insurance limit in \$Millions	Tillinghast
log_premium	logarithm of the D&O insurance premium in \$Millions	Tillinghast
size	logarithm of the total assets in \$Millions	Compustat
vol	standard deviation of daily stock returns for the previous year	CRSP
priorclaim	indicator for whether the firm had D&O claims during the past 10 years	Tillinghast
cumret	cumulative abnormal returns (based on CRSP weighted index) for the previous year	CRSP
turnover	average daily trading volume (in shares percentage) for the previous year	CRSP
lev	total debt (debt in current liabilities plus long-term debt) as a percentage of total assets	Compustat
inst_block10	indicator for whether there is at least one institutional investor with shareholdings greater than 10%	Thomson Financial
ins_value	percentage of inside directors' shareholding	IRRC or Hand Collected
dir_out	number of outside directors as a percentage of total number of directors	IRRC or Hand Collected
dir_out_app	percentage of outside directors that start board service after the CEO joins the board	IRRC or Hand Collected
ceo_cob	dummy, =1 if the CEO is also chairman of board	IRRC or Hand Collected
log_ceo_exp	$\ln(\text{number of years the CEO has served on the board of directors} + 1)$	IRRC or Hand Collected
risk_ind	indicator for risky industries including biotechnology industry (SIC 2833-2836), computer hardware industry (SIC 3570-3577), electronics industry (SIC 3600-3674), retailing industry (SIC 5200-5967) and computer software industry (SIC 7371-7379).	Compustat
sresid	Dechow and Dichev (2002) measure estimated at the firm level using six years of time-series data (see Appendix II)	Compustat
goodnews_mkt	indicator for whether the abnormal return for the [-2, 0] window around an earnings forecast is positive	First Call, CRSP
dgoodnews	indicator for whether a firm made at least one good-news (qualifying as a positive surprise) earnings forecast for a year	First Call

Appendix I (Continued): Variable Definition

Variables	Definition	Data Source
dfcast	indicator for whether a firm made any earnings forecasts for a given year	First Call
goodnews	indicator for whether an earnings forecast contains good-news (qualifying as a positive surprise), as defined by First Call	First Call
dbadnews	indicator for whether a firm made at least one bad-news (not qualifying as a positive surprise) earnings forecast for a year	First Call
dbadnews_mkt	indicator for whether a firm made at least one bad-news (with negative day [-2, 0] abnormal return) earnings forecast for a year	First Call, CRSP
neps_chg_neg	number of negative seasonal changes in quarterly earnings for the year the insurance contract is in effect	Compustat
neps_chg_pos	number of positive seasonal changes in quarterly earnings for the year the insurance contract is in effect	Compustat
horizon	days between forecast date and the actual report date	First Call
precision	indicator for whether a management earnings forecast is quantitative (point, range or bound estimates)	First Call
fcast_diff_abs	the absolute value of the difference between forecast value (the point estimate or the mean of a range estimate) and I/B/E/S consensus estimate	First Call & I/B/E/S
act_diff_abs	the absolute value of the difference between actual reported earnings and I/B/E/S consensus estimate	First Call & I/B/E/S
d_lag	indicator for whether there is a forecast in the preceding year regarding a similar fiscal period	First Call
horizon_lag	for a given forecast, the average horizon for the forecasts made in the preceding year regarding a similar fiscal period end	First Call
precision_lag	for a given forecast, the average precision for the forecasts made in the preceding year regarding a similar fiscal period end	First Call
fcast_diff_abs_lag	for a given forecast, the average fcast_diff_abs for the forecasts made in the preceding year regarding a similar fiscal period	First Call
d_annual	indicator for whether a forecast is regarding annual or quarterly earnings	First Call
mills	inverse Mills ratio from a probit model on the likelihood of issuing management earnings forecasts	-

Appendix II: Computation of *sresid* using the Dechow-Dichev model

$$\Delta WC_t / \overline{TA}_t = b_0 + b_1 CFO_{t-1} + b_2 CFO_t + b_3 CFO_{t+1} + \varepsilon_t$$

where,

ΔWC = change in working capitals (defined as change in accounts receivable + change in inventory – change in change in accounts payable + change in other operating assets (net));

CFO = cash flow from operations scaled by average assets;

\overline{TA} = average total assets.

The above regression is estimated for each firm and each year using observations in six consecutive years on a rolling-window basis. *Sresid* is defined as the standard deviation of the six residual terms obtained from the regression. To avoid any hindsight bias, for year *t*, the *sresid* measure is based on the financial information available up to year *t* only. For example, *sresid* for 2001 is estimated by a regression linking ΔWC_{2000} with CFO_{1999} , CFO_{2000} , and CFO_{2001} , ΔWC_{1999} with CFO_{1998} , CFO_{1999} , and CFO_{2000} and so on.

Table 1 Sample Selection

	# of Firms
Initial Sample:	
Non-financial firms included in the 2001 or 2002 Tillinghast Survey	552
Matched Sample	
Number of firms matched with SIC, assets, #employees, revenue and state	323
Data Availability Constraints	
With available data in Compustat, CRSP and Thomson Financial and First Call	(111)
Final Sample of Firms	212
Firms with forecast(s)	128
Firms without forecast(s)	84

Note:

Tillinghast surveys 2001 and 2002 cover 3169 firms, among which 1236 are repeated respondents. After excluding non-publicly-traded, non-US and financial firms, we get an initial sample of 552 firms. We then perform a matching algorithm that incorporates matching criteria on assets range, revenue range, number of employees, state code, 2-digit SIC code, year in business and after-tax loss (all of which are reported by the Tillinghast survey) and get a matched sample of 323 firms. Data availability constraints further reduce the sample to 212 firms (128 firms with forecasts and 84 firms without forecasts in the sample period).

Table 2 Summary Statistics
Panel A: D&O insurance and firm characteristics (212 firms and 315 observations)

Variable	Q1	Median	Q3	Mean	Stdev
<i>totlim (in millions)</i>	10.00	20.00	50.00	37.44	46.41
<i>totprem (in millions)</i>	0.19	0.39	0.63	0.48	0.41
<i>log_limit</i>	2.30	3.00	3.91	3.06	1.05
<i>log_premium</i>	-1.65	-0.93	-0.46	-1.08	0.89
<i>size</i>	4.18	5.44	7.36	5.76	2.17
<i>vol</i>	0.03	0.06	0.08	0.06	0.03
<i>cumret</i>	-0.28	0.25	0.66	0.22	0.82
<i>priorclaim</i>	0.00	0.00	0.00	0.20	0.40
<i>turnover</i>	0.00	0.01	0.01	0.01	0.01
<i>risk_ind</i>	0.00	0.00	1.00	0.49	0.50
<i>lev</i>	0.00	0.04	0.25	0.14	0.18
<i>inst_block10</i>	0.00	0.00	1.00	0.27	0.45
<i>dir_out</i>	0.43	0.60	0.75	0.60	0.18
<i>dir_out_app</i>	0.14	0.67	1.00	0.56	0.39
<i>ceo_cob</i>	0.00	1.00	1.00	0.60	0.49
<i>log_ceo_exp</i>	1.39	1.95	2.48	1.88	0.80
<i>ins_value</i>	0.00	0.03	0.09	0.08	0.14
<i>dfcast</i>	0.00	1.00	1.00	0.57	0.50
<i>dfcast_lag</i>	0.00	1.00	1.00	0.54	0.50
<i>dgoodnews</i>	0.00	0.00	0.00	0.17	0.38
<i>dgoodnews_mkt</i>	0.00	0.00	1.00	0.42	0.49
<i>dbadnews</i>	0.00	1.00	1.00	0.55	0.50
<i>dbadnews_mkt</i>	0.00	0.00	1.00	0.49	0.50
<i>neps_chg_neg</i>	1.00	2.00	3.00	1.98	1.36
<i>neps_chg_pos</i>	1.00	2.00	3.00	2.00	1.37

Panel B: Forecast Properties

Variable	Q1	Median	Q3	Mean	Stdev
<u>Overall sample (780 forecasts for 128 firms):</u>					
<i>precision</i>	1.00	1.00	1.00	0.95	0.22
<i>horizon</i>	48.00	99.00	274.50	165.46	145.84
<i>d_annual</i>	0.00	0.00	1.00	0.48	0.50
<i>d_lag</i>	0.00	0.00	1.00	0.49	0.50
<u>Sub-sample with point or range estimates to compute amount of news released in a forecast (587 forecasts for 116 firms):</u>					
<i>fcast_diff_abs</i>	0.02	0.05	0.16	0.20	0.45
<i>act_diff_abs</i>	0.03	0.06	0.16	0.15	0.24

Note: See Appendix I for variable definitions.

Table 3 Regression of the Logarithm of the D&O Limits on Economic Factors

<i>dependent variable</i>	<i>coefficient</i>	<i>t-stat</i>
<i>Intercept</i>	0.965***	[3.521]
<i>cumret</i>	0.095***	[2.712]
<i>turnover</i>	-1.495	[-0.452]
<i>vol</i>	-2.492	[-1.221]
<i>inst_block10</i>	-0.001	[-0.011]
<i>lev</i>	-0.108	[-0.459]
<i>log_ceo_exp</i>	-0.226***	[-3.320]
<i>priorclaim</i>	0.056	[0.645]
<i>risk_ind</i>	0.014	[0.174]
<i>size</i>	0.386***	[16.24]
<i>ceo_cob</i>	0.181**	[2.432]
<i>dir_out</i>	0.215	[0.886]
<i>dir_out_app</i>	0.339**	[2.294]
<i>ins_value</i>	0.089	[0.330]
<i>Adj. R-squared</i>	0.75	
<i># observations</i>	315	

Note: See Appendix I for variable definitions. The independent variables take values immediately before the effective date of the D&O insurance contract. ***, **, * denote significance level at the 1%, 5%, and 10% levels of a two-tailed t-test, respectively. The statistics are based on Huber-White standard errors adjusting for firm-level clustering.

Table 4 Logistic regressions of likelihood of issuing forecasts, good-news forecasts and bad-news forecasts on litigation risk

Panel A: Dependent Variable = Prob{dfcast=1}

	Model 1			Model 2		
	coeff	ME	χ^2	coeff	ME	χ^2
Intercept	0.905***		15.09	-0.573**		4.09
log_premium	0.56***	0.13	11.35	0.222	0.05	1.84
xlimit	-0.228	-0.06	0.59	0.052	0.01	0.03
dfcast_lag				2.197***	0.34	66.65
Likelihood Ratio	15.491***			88.991***		
Pseudo Adj. Rsq	0.06			0.33		
# of observations	315			315		

Panel B: Dependent Variable = Prob{dgoodnews=1}

	Model 1			Model 2			Model 3			Model 4			Model 5		
	coeff	ME	χ^2	coeff	ME	χ^2	coeff	ME	χ^2	coeff	ME	χ^2	coeff	ME	χ^2
Intercept	-1.159***		19.55	-2.683***		26.27	-2.959***		26.78	-1.329***		13.19	-2.598***		12.24
log_premium	0.397*	0.06	3.16	0.123	0.02	0.22	0.113	0.01	0.19	0.225	0.05	1.92	-0.116	-0.01	0.12
xlimit	-0.111	-0.02	0.09	0.077	0.01	0.04	0.084	0.01	0.04	-0.064	-0.02	0.05	-0.127	-0.02	0.06
dfcast_lag				1.822***	0.36	18.29	1.848***	0.36	18.80	1.896***	0.42	46.73	1.585***	0.31	6.71
neps_chg_pos							0.122	0.02	1.33	0.069	0.02	0.55	0.086	0.01	0.33
sresid													-22.652	-0.15	2.48
Likelihood Ratio	4.664*			29.997***			31.09***			67.041***			15.148***		
Pseudo Adj. Rsq	0.02			0.15			0.16			0.26			0.15		
# of observations	315			315			315			315			162		

Table 4 (Continued) Logistic regressions of likelihood of issuing forecasts, good-news forecasts and bad-news forecasts on litigation risk

Panel C: Dependent Variable = Prob{dbadnews=1}

	Model 1			Model 2			Model 3			Model 4			Model 5		
	coeff	ME	χ^2	coeff	ME	χ^2	coeff	ME	χ^2	coeff	ME	χ^2	coeff	ME	χ^2
<i>Intercept</i>	0.894***		14.35	-0.565**		3.88	-0.569*		2.74	-0.63*		3.62	-0.454		0.63
<i>log_premium</i>	0.647***	0.15	14.71	0.337**	0.08	4.04	0.337**	0.08	4.08	0.297*	0.07	3.13	0.719***	0.16	9.08
<i>xlimit</i>	-0.314	-0.08	1.14	-0.065	-0.02	0.04	-0.065	-0.02	0.04	-0.076	-0.02	0.07	-1.1**	-0.27	5.18
<i>dfcast_lag</i>				2.151***	0.36	67.92	2.151***	0.36	67.41	1.718***	0.36	43.13	2.698***	0.36	34.28
<i>neps_chg_neg</i>							0.002	0.00	0.00	-0.03	-0.01	0.11	-0.139	-0.03	0.85
<i>sresid</i>													18.627	0.41	2.54
<i>Likelihood Ratio</i>	20.074***			91.407***			91.408***			62.991***			67.142***		
<i>Pseudo Adj. Rsq</i>	0.08			0.34			0.34			0.24			0.46		
<i># of observations</i>	315			315			315			315			162		

Note: Variable definitions are presented in Appendix I and II. In each model, coefficients (coeff), marginal effects (ME) and chi-square values are reported. In panel B and C, Except for Model 4, where dbadnews is based on market responses to forecasts, in all other models dbadnews is based on First Call's classification of the nature of forecasts. Model 5 is based on a sub-sample of firms with sresid also included in the 1st-stage limit regression. ***, **, * denote significance level at the 1%, 5%, and 10% levels of a two-tailed t-test, respectively, based on Huber-White standard errors adjusting for firm-level clustering.

Table 5 Litigation risk and forecast properties

Panel A: OLS regression of forecast horizon on litigation risk

<i>dependent variable = horizon</i>	<i>coefficient</i>	<i>t-stat</i>
<i>Intercept</i>	37.008***	[3.779]
<i>log_premium</i>	-3.413	[-0.625]
<i>goodnews * log_premium</i>	14.553	[0.837]
<i>goodnews</i>	50.871***	[2.62]
<i>d_lag</i>	29.536**	[2.307]
<i>d_lag * horizon_lag</i>	0.141***	[3.251]
<i>mills</i>	35.451***	[2.857]
<i>xlimit</i>	10.979	[1.12]
<i>d_annual</i>	153.286***	[16.775]
<i>Adj. R-squared</i>	0.45	
<i># of observations</i>	780	

Panel B: Logistic regression of forecast precision on litigation risk

<i>dependent variable = precision</i>	<i>coefficient</i>	<i>Marginal Effect</i>	χ^2
<i>Intercept</i>	3.728***		61.748
<i>log_premium</i>	0.681***	0.014	8.065
<i>goodnews * log_premium</i>	-1.693***	-0.107	14.620
<i>goodnews</i>	-0.795	-0.032	1.255
<i>d_annual</i>	0.548	0.012	1.668
<i>d_lag</i>	-2.085***	-0.160	7.234
<i>mills</i>	-1.006**	-0.045	4.336
<i>d_lag * precision_lag</i>	3.244***	0.027	12.530
<i>xlimit</i>	-0.199	-0.006	0.282
<i>Likelihood Ratio</i>	42.764***		
<i>Pseudo Adj. R-squared</i>	0.17		
<i># of observations</i>	780		

Panel C: OLS regression of amount of news released in forecast on litigation risk

<i>dependent variable = fcast_diff_abs</i>	<i>coefficient</i>	<i>t-stat</i>
<i>Intercept</i>	0.122***	[2.643]
<i>log_premium</i>	-0.038*	[-1.807]
<i>goodnews * log_premium</i>	-0.159	[-1.534]
<i>goodnews</i>	0.054	[1.351]
<i>act_diff_abs</i>	0.219***	[2.951]
<i>d_annual</i>	0.043	[0.896]
<i>d_lag</i>	-0.215***	[-3.92]
<i>d_lag * fcast_diff_abs_lag</i>	0.86***	[7.649]
<i>mills</i>	-0.08	[-1.25]
<i>xlimit</i>	0.025	[0.41]
<i>Adj. R-squared</i>	0.48	
<i># of observations</i>	587	

Note: Variable definitions are presented in Appendix I. ***, **, * denote significance level at the 1%, 5%, and 10% levels of a two-tailed t-test, respectively, based on Huber-White standard errors adjusting for firm-level clustering.