City, University of London Institutional Repository
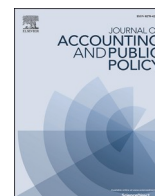
Full length article

Misstatement verifiability and managers' earnings warning decisions☆

Jihun Bae [a],[*], Jaeyoon Yu [b]

[a] *Department of Business Economics, Erasmus School of Economics, Erasmus University Rotterdam, the Netherlands*
[b] *School of Accounting, College of Business Administration, Central Michigan University, United States*

ARTICLE INFO

ABSTRACT

We examine whether the verifiability of misstatements in prior forward-looking earnings disclosures contributes to managers' decisions to issue earnings warnings. Using securities class action lawsuits from 1996 to 2019 pertaining to forward-looking earnings disclosures, we find that earnings warnings are positively associated with the verifiability of misstatements in such disclosures. The results survive entropy balancing and firm-fixed effects to mitigate endogeneity concerns. The positive relation between earnings warnings and misstatement verifiability is more pronounced for firms 1) with a general counsel in the top management team and 2) that face higher ex-ante litigation risk, and less pronounced for firms whose managers engaged in insider selling during the class action lawsuit period. We also show that earnings warnings help to increase the likelihood of a lawsuit dismissal (i.e., lowering litigation costs) when the lawsuit involves misstatements that are more (rather than less) verifiable. Taken together, our findings suggest that managers issue earnings warnings when it helps to reduce litigation costs, consistent with the notion that managers can achieve a greater reduction in litigation costs by issuing earnings warnings.

1. Introduction

An earnings warning can reduce the risk of litigation and/or settlement costs, lowering the cost of litigation expected by the firm (Skinner 1994; Field et al. 2005; Donelson et al. 2012; Cutler et al. 2019; Houston et al. 2019; Huang et al. 2020).[1] Disclosure-related shareholder litigation is typically brought under Securities and Exchange Commission (SEC) Rule 10b-5, which prohibits companies from 1) disseminating false or misleading information, and 2) failing to disclose information materially relevant to investors. This rule imposes a general duty on issuers of statements "to correct their statements upon discovery that the statements were misleading when made and to update certain statements upon discovery that they became misleading at some time after they were made (Rosenblum 1991)."

---

* Corresponding author.
E-mail addresses: bae@ese.eur.nl (J. Bae), yu10j@cmich.edu (J. Yu).

[1] For simplicity, we refer to the expected cost of litigation as *litigation costs* unless specified otherwise. As nearly all shareholder lawsuits are either settled or dismissed, litigation costs can be estimated as the chance of settlement multiplied by the expected settlement amount.

While a stock price decline is commonly regarded as a necessary condition for litigation under Rule 10b-5, a successful lawsuit requires this decline to have been caused by the company's intent to mislead the market (Skinner 1994). Before issuing negative earnings announcements, managers are likely to be concerned about a lawsuit if they previously provided forward-looking statements that investors could construe as inaccurate, incomplete, or misleading. Several studies have examined managerial decisions to issue earnings warnings, but how these decisions are affected by the *verifiability of misstatements* in prior disclosures has not been investigated. In this paper, we address this gap in the literature.

Lawsuits related to forward-looking disclosure can be classified as those involving either *more verifiable* or *less verifiable* misstatements. If plaintiffs attribute their losses to statements that are explicitly untrue or false due to accounting number-related problems (hereafter, *more verifiable* misstatements), the prior disclosures are likely to contain objective evidence of managers' intentional misstatement. On the other hand, if plaintiffs' complaints have other causes, mainly omission or concealment of material information (hereafter, *less verifiable* misstatements), it may be difficult for the plaintiffs' attorneys to uncover specific evidence of managers' intentional misstatement.[2] Thus, cases involving *more verifiable* misstatements are more likely to be settled—as opposed to dismissed—than those involving *less verifiable* ones. Since cases involving *more verifiable* misstatements are likely to incur higher litigation costs, managers can achieve a greater reduction in litigation costs in such cases by issuing earnings warnings. Based on their private information, managers are likely aware of whether or not their previous disclosures will prove to have been misleading.[3] Therefore, we predict that managers are more likely to issue earnings warnings when expecting a lawsuit complaint based on *more verifiable* misstatements vis-à-vis *less verifiable* ones.

To test our hypothesis, we use a sample of firm-quarters that expect earnings disappointments for the period 1996–2019 and exploit information from management earnings forecasts and securities class action lawsuit filings. We find that firms with *more verifiable* misstatements are more likely to warn of upcoming earnings disappointments compared to firms with *less verifiable* misstatements. This result is consistent with the view that managers are less likely to issue earnings warnings when their private information indicates a lack of objective evidence of intentional misstatement and, consequently, any lawsuit is more likely to be dismissed than settled. Our result holds with entropy balancing and firm-fixed effects to address endogeneity concerns.

To gain further insights into managers' incentives to issue earnings warnings, and to mitigate endogeneity concerns, we perform cross-sectional analyses based on three important factors: 1) the presence of a general counsel in the top management team, 2) the firm's ex-ante litigation risk, and 3) whether managers engage in insider selling during the class action lawsuit period. First, given the legal expertise of general counsels and their role in reducing litigation risk (Kwak et al. 2012), we predict that firms with a general counsel in top management are more likely to issue earnings warnings when they face higher litigation risk arising from *more verifiable* misstatements vis-à-vis *less verifiable* ones. Second, we expect that firms with higher ex-ante litigation risk would have stronger incentives to reduce litigation costs associated with misstatement. Accordingly, we predict that the relation between earnings warnings and the verifiability of prior misstatements is more pronounced for firms with ex-ante litigation risk. Lastly, we expect that managers' incentives to issue earnings warnings in response to the verifiability of prior misstatements become weaker with the existence of insider selling activities during the class action period because plaintiffs' attorneys may exploit the insider selling as hard evidence of intentional wrongdoing, regardless of prior misstatement verifiability. Our empirical results confirm these predictions.

Next, we consider litigation outcomes, i.e., settled or dismissed. Cutler et al. (2019) provide empirical evidence that disclosures made by managers play a crucial role in judges' decisions to allow a lawsuit to proceed or to dismiss it. Given our key finding of the relation between verifiability of prior misstatements and earnings warnings, we examine whether the effect of earnings warnings on litigation outcomes differs between cases involving *more verifiable* and *less verifiable* misstatements. We find that, for *more verifiable* misstatements, the issuance of earnings warnings is negatively associated with the likelihood of a lawsuit being settled. Since settlement is costlier than dismissal of a lawsuit, this finding is consistent with the view that earnings warnings lead to lower litigation costs. For *less verifiable* misstatements, on the other hand, we do not find a relation between earnings warnings and litigation outcomes, indicating that firms in this case are unlikely to benefit from earnings warnings. Overall, this evidence combined with our key findings suggests that verifiable misstatements in prior disclosures tend to incentivize managers to issue earnings warnings, which contribute to lowering litigation costs.

Our primary results remain robust to a battery of sensitivity tests, that is, (1) using the sued firm as its own control, (2) accommodating changes in the magnitude of a negative earnings surprise, (3) controlling for management forecast stickiness, and (4) controlling for the permanence of earnings surprises, expectations management, and alternative disclosure channels.

This study makes several contributions to the prior literature. First, it contributes to the determinants of earnings warnings. While prior studies on managers' warning decisions have examined the determinants and consequences of earnings warnings (Donelson et al. 2012; Houston et al. 2019; Huang et al. 2020), none pay attention to the verifiability of misstatements embedded in prior disclosures. Our empirical findings show that *more verifiable* misstatements incentivize managers to issue earnings warnings as a means of reducing litigation costs.

Second, we contribute to the discussion on managers' affirmative duty to disclose (Heitzman et al. 2010; Billings and Cedergren

---

[2] Johnson et al. (2007) suggest that, after enactment of the Private Securities Litigation Reform Act, the likelihood of a lawsuit is higher when there is objective evidence that a manager acted with the intention of misleading investors. Accordingly, managers' concerns about litigation costs would be higher when the prior statements include material misstatements that plaintiffs' attorneys can exploit as hard evidence of managers' fraudulent intent to mislead investors (Johnson et al. 2007; Choi 2007).

[3] Managers typically possess an information advantage relative to investors. Skinner (1994, 1997) suggests that managers tend to provide early bad earnings news when their private information indicates that a lawsuit is likely or that litigation costs are high.

2015; Li et al. 2016). Heitzman et al. (2010) suggest that existing voluntary disclosure studies may be biased because information disclosed by obligation is not voluntary disclosure. Using the adoption of the SEC's 1994 rule on disclosure of advertising costs, their study indicates that considering managers' duty to disclose as well as managers' voluntary disclosure incentives improves the explanatory power of disclosure decisions. Li et al. (2016) suggest that some management earnings forecasts are issued to comply with the 10b-5 disclosure duty, and as such are not voluntary disclosures.[4] Similarly, our study provides evidence that managers strategically comply with the 10b-5 disclosure duty by issuing an earnings warning only when it helps to reduce litigation costs.

Finally, this study offers important implications for investors' understanding of the disclosure behavior of managers. The evidence suggests that managers may choose earnings warnings as a device to reduce litigation costs associated with misleading previous disclosures. Thus, to understand managers' incentives in issuing earnings warnings, investors should consider the content of previous management disclosures.

The remainder of this paper proceeds as follows. Section 2 develops our hypotheses. Section 3 describes sample selection and research design. Section 4 provides empirical evidence and Section 5 discusses robustness tests. Section 6 concludes the paper.

2. Hypothesis development

2.1. Regulatory backgrounds

SEC Rule 10b-5 makes it unlawful to make an "untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made…not misleading". The rule also stipulates that managers have an affirmative disclosure duty when a previous disclosure becomes inaccurate, incomplete, or misleading. To be successful in a class action lawsuit under Rule 10b-5, the plaintiff must prove "(1) a misstatement or omission of (2) a material fact (3) made with intent (4) that the plaintiff justifiably relied on (5) causing injury in connection with the purchase or sale of a security" (Skinner 1994). Generally, most 10b-5 cases are brought as a result of a large drop in stock price that can be tied to materially misleading prior disclosures (Skinner 1994; Kasznik and Lev 1995). Plaintiffs in forward-looking earnings disclosure-related shareholder lawsuits typically allege that managers have violated their duty to disclose under Rule 10b-5 by failing to disclose adverse earnings news in a timely manner.

The 1995 enactment of the Private Securities Litigation Reform Act (PSLRA) expanded safe-harbor protection to firms issuing forward-looking information, thereby significantly changing the disclosure environment.[5] Under the PSLRA, even in the absence of appropriate disclaimers on forward-looking disclosures, the plaintiff must still prove that the statements were made by the firm with actual knowledge that they were false or misleading. Cazier et al. (2020) fail to find a significant association between qualitative forward-looking statements and litigation risk, suggesting that safe-harbor protection is effective in encouraging forward-looking disclosures. Thus, plaintiffs' attorneys are more likely to focus on collecting objective evidence in support of their claim that the firm and its managers acted with fraudulent intent to mislead investors. Choi (2007) finds that after PSLRA enactment, hard evidence of fraud, such as an accounting restatement, SEC investigation, or enforcement action, increases the likelihood of litigation. Furthermore, lawsuits involving objective evidence are more likely to be settled than dismissed in the post-PSLRA period (Pritchard and Sale 2005; Choi 2007; Johnson et al. 2007). Overall, whether plaintiffs are able to identify verifiable evidence in support of their allegations has become crucial since the 1995 enactment of the PSLRA.

2.2. Literature review on earnings warnings and litigation

Prior studies have extensively investigated the relationship between litigation risk and earnings warnings. One stream of literature has examined whether managers issue earnings warnings to reduce litigation risk. The seminal work of Skinner (1994) implies that managers have incentives to disclose bad news in a timely manner to reduce litigation risk (i.e., the litigation reduction hypothesis). In line with this, Skinner (1997) shows that the timeliness of disclosure is negatively related to the settlement amount. However, Francis et al. (1994) show that 62% of sued firms (28 out of 45 in their lawsuit sample) issued warnings whereas only 13% of non-sued firms (7 out of 53 in their at-risk sample) did, suggesting that firms that have issued earnings warnings are more likely to get sued.

More recent studies provide empirical results that are in support of the litigation reduction hypothesis (Field et al. 2005; Houston et al. 2019; Huang et al. 2020). Using a simultaneous equations approach, Field et al. (2005) show that earnings warnings reduce the

---

[4] Li et al. (2016) focus on three different incentives of management earnings forecasts (i.e., capital market incentive, insider trading rule-driven incentive and opportunistic trading incentive) and document that 22% of their management forecasts are issued by an insider trading rule (i.e., "disclose or abstain" rule) driven incentive. Importantly, they exclude management forecasts classified as earnings warnings from their sample because management forecasts that are issued late in a period are designed primarily to reduce litigation risk, which is very different from the other three incentives.

[5] The safe harbor provision increases protection for forward-looking disclosures if firms provide cautionary statements. Congress includes a safe harbor provision in the law that protects firms from liability if their forecasts are accompanied by meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statement (Nelson and Pritchard 2007). Examples of cautionary statements are: "Our business has been, and could continue to be, materially adversely affected as a result of general economic and market conditions."; "Our operating results fluctuate and may fail to satisfy the expectations of public market analysts and investors, causing our stock price to decline."; and "Competing technologies may reduce demand for our products." See more examples of safe harbor cautionary language in Appendix A in Nelson and Pritchard (2007). Consistent with this, Li (2018) finds that firms' use of the negative precaution of a press release is negatively associated with litigation risk.

likelihood of litigation rather than triggering it. Exploiting legal events that are exogenous to firms' disclosure decisions, Houston et al. (2019) empirically document that litigation risk incentivizes firms to issue management earnings forecasts. Similarly, Huang et al. (2020), using the staggered adoption of universal demand (UD) laws, produce empirical results in support of higher litigation risk leading firms to issue earnings warnings. In conclusion, though mixed, a majority of existing studies support the view that managers issue earnings warnings to reduce litigation risk.

Another stream of literature examines how disclosures made by firms affect the likelihood of being sued and/or litigation outcomes (Choi 2007; Johnson et al. 2007; Rogers et al. 2011; Billings and Cedergren 2015; Cutler et al. 2019; Cazier et al. 2020). For example, Rogers et al. (2011) focus on disclosure tone in qualitative statements. They show that an optimistic tone is positively associated with the likelihood of being sued. However, Cazier et al. (2020) highlight the role of the safe harbor for forward-looking statements—as opposed to non-forward-looking statements—in the post-PSLRA era. They show that, in general, there is no significant relation between disclosure tone in forward-looking statements and the likelihood of a lawsuit, suggesting that safe-harbor protection effectively shields firms' forward-looking statements from potential litigation. Unlike other studies, Cutler et al. (2020) focus on lawsuit outcomes (i.e., settled or dismissed) and find that more disclosures increase the likelihood of settlement.

A few studies focus on how firms change their disclosure behavior after experiencing litigation (Rogers and Van Buskirk 2009; Billings et al. 2021). Rogers and Van Buskirk (2009) show that firms are less likely to issue management earnings forecasts after being sued. Extending that paper, Billings et al. (2021) provide empirical evidence that firms increase bad news disclosures while decreasing good news disclosures after having experienced a lawsuit. Overall, disclosure studies extensively examine issues related to earnings warnings, but no study has examined the role of misstatement verifiability in explaining managers' warning decisions.

2.3. Verifiability of misstatements and earnings warnings

As discussed earlier, the enactment of the PSLRA changed the legal environment substantially. Hard evidence of misconduct has become more critical in the post-PSLRA era (Choi 2007; Johnson et al. 2007; Chalmers et al. 2012; Donelson et al. 2015). Johnson et al. (2007) document that the likelihood of a lawsuit is higher when there is objective evidence that managers acted with the intention to mislead investors. Using the sample of firms going public in the period 1990–1999, Choi (2007) shows that firms that engaged in fraud were less likely in the post-PSLRA period to face a class action lawsuit if no hard evidence was present. He further shows that the lawsuits lacking hard evidence are more likely to be dismissed. We extend this discussion to managers' forward-looking statements and expect that managers' warning decisions vary with the verifiability of misstatements in previous disclosures.

If plaintiffs claim that previous misstatements include explicitly untrue statements or accounting number-related problems, these misstatements are presumed to have been made intentionally and explicitly by managers. Such hard evidence can be used to hold managers responsible for intentional misstatements. In contrast, if plaintiffs complain about previous disclosure misstatements arising mainly from omission or concealment of material information, they may have difficulty proving the defendants' faulty behavior. This is because the previous disclosures may not include clean evidence of intentional misrepresentation, making the alleged misstatements *less verifiable* in court.,[6][7]Building upon the particular importance of hard evidence in the post-PSLRA era, we argue that managers are more likely to face higher litigation costs when they have made *more verifiable* misstatements than *less verifiable* ones. In response to the higher litigation cost arising from *more verifiable* misstatements, managers are likely to be incentivized to issue earnings warnings because these can reduce litigation costs. We formulate the following hypothesis in an alternative form.

> **H1:** Managers are more likely to issue earnings warnings when they have made *more verifiable* misstatements in prior disclosures than *less verifiable* ones.

We do not exclude the possibility that the relation between earnings warnings and misstatement verifiability is insignificant or negative. Some studies show that explicit earnings warnings prior to a class action lawsuit are often viewed as corrective disclosures (Kasznik and Lev 1995). Such disclosures may serve as clear evidence of misreporting and reduce the probability of a case getting dismissed by the court. Some empirical studies support this argument (Donelson and Hopkins 2016; Cutler et al. 2019). Donelson and Hopkins (2016) show that managers tend not to issue negative earnings forecasts when there is a large, market-wide stock price decline because the adverse earnings news may increase litigation risk. Cutler et al. (2019) document that more disclosures increase the likelihood that a judge will decide to allow a lawsuit to proceed, suggesting that managers not legally bound to do so may be reluctant to provide negative earnings news. Accordingly, it is probable that managers who face higher litigation costs arising from *more verifiable* misstatements may be reluctant to issue earnings warnings.[8] Meanwhile, Johnson et al. (2007) do not find any relation between disclosures and settlement outcomes in the post-PSLRA period. Cazier et al. (2020) also show that, due to safe-harbor protection for forward-looking statements, disclosure tone in firms' qualitative statements is not related to the likelihood of being sued. Considering these arguments, our hypothesis—whether managers are more likely to issue earnings warnings when they have included in their disclosures *more verifiable* misstatements than *less verifiable* ones—is an open empirical question.

---

[6] One might wonder whether managers are more likely to issue earnings warnings when expecting a lawsuit complaint based on *less verifiable* misstatements than when involving no misstatement. To the extent that *less verifiable* misstatements trigger non-frivolous cases, managers may issue earnings warnings to reduce litigation costs. We discuss this issue in empirical section.

[7] See Appendix B for examples of *more verifiable* and *less verifiable* misstatements.

[8] We are grateful for the suggestion of this alternative argument by an anonymous reviewer.

Table 1
Sample selection.

Panel A. Sample selection for total firm-quarters	
Procedures	Observations
The number of firm-quarter observations with the necessary variables obtained from the intersection of COMPUSTAT, CRSP and I/B/E/S for 1996–2019	243,251
Less: absolute value of a negative earnings surprise smaller than 0.1% of its stock price	(163,311)
Less: Regulated industries (SIC code in 4800–4999 and 6000–6999)	(29,646)
Less: Stock price less than $2	(1,582)
Less: Not listed on NYSE, AMEX or NASDAQ	(2,060)
Less: No point/range quarterly forecasts	(4,967)
Total firm-quarters including the lawsuit sample	41,685

Panel B. Sample selection for litigation firm-quarters	
Procedures	Observations
Lawsuit filings from fiscal year 1996 to 2019	5,593
Less: IPO allocation cases	(820)
Less: Restatement announcement cases	(584)
Less: Options backdating, SEC investigations, bankruptcy protection filings, FDA approval cases, etc.	(3,194)
Less: Missing observations in Panel A	(635)
Total lawsuit sample	360

This table outlines sample selection procedures. Panel A describes the procedures for our firm-quarter sample. Panel B describes firm-quarter observations with securities class action lawsuits.

3. Sample selection and research design

3.1. Sample selection

Following the prior literature on earnings warning decisions (Billings and Cedergren 2015; Huang et al. 2020), we use a sample of firm-quarter observations. We require sample observations to have all non-missing data in COMPUSTAT (for financial statement variables), CRSP (for stock-related variables), and I/B/E/S (for management earnings forecasts and analyst forecasts) for 1996–2019. Our sample starts after the 1995 enactment of the PSLRA when litigation risk attributable to forward-looking disclosure became lower. We examine firms that are exposed to potential litigation risk as a result of reporting a negative earnings surprise (Francis et al. 1994; Field et al. 2005; Huang et al. 2020). Specifically, we choose a firm if its absolute value of negative earnings surprise is greater than 0.1% of its stock price (Tucker 2007). We exclude firms in regulated industries (i.e., utilities (4800–4999) and financials (6000–6999)) from the sample because they have different incentives for disclosure than firms in non-regulated industries. To mitigate the small denominator problem, we exclude observations with a share price less than $2 in calculating negative earnings surprises (Field et al. 2005). We also restrict the sample to those firms with common shares listed on NYSE, AMEX, or NASDAQ. Lastly, we delete firm-quarters that do not include point or range quarterly forecasts. After the series of selection criteria, we are left with 41,685 firm-quarter observations. The selection process is outlined in Table 1, Panel A.

We obtain class action lawsuit cases from Cornerstone Research and collect class action complaints from the Stanford Law School Securities Class Action Clearinghouse (http://securities.stanford.edu/). Our sample includes lawsuits filed after the 1995 enactment of the PSLRA because it significantly changed the litigation and voluntary disclosure environment. In this way, we avoid confounding effects that can be driven by this regulatory change. To ensure that all of the lawsuits in our sample pertain to the disclosure of forward-looking earnings information, we carefully read through 5,593 class action complaints filed from 1996 to 2019 and exclude several types of lawsuits. Specifically, we eliminate lawsuits if the lawsuit-triggering events relate to IPO allocations, restatement announcements, options backdating, SEC investigations, bankruptcy protection filings, and U.S. Food and Drug Administration (FDA) approval cases.[9] In addition, we manually check class action complaints to identify the quarter in which the original lawsuit triggering event takes place.[10] After applying this selection criteria, we are left with 360 earnings disclosure-related lawsuit cases. The sample selection procedures for the litigation observations are described in Table 1, Panel B.

---

[9] We exclude these cases only if the lawsuit triggering event is not associated with disclosures on forward-looking earnings. For example, following Field et al. (2005), we drop the FDA approval cases because they are not related to upcoming earnings in the specific period. Similarly, we drop cases that involve restatements of prior financial statements because the restatements are associated with accounting numbers reported in the past and not associated with forward-looking earnings.

[10] Grundfest and Perino (1997) find that lawsuit filing follows a triggering event by, on average, 79 days. Based on their finding, prior studies assume that a lawsuit triggering event occurs in the quarter that includes the 79 days prior to a lawsuit filing date (Rogers and Stocken, 2005). However, if this assumption mis-measures the lawsuit-triggering quarter, the test results may be less robust. We eliminate this problem by manually identifying actual lawsuit-triggering quarters from lawsuit complaints.
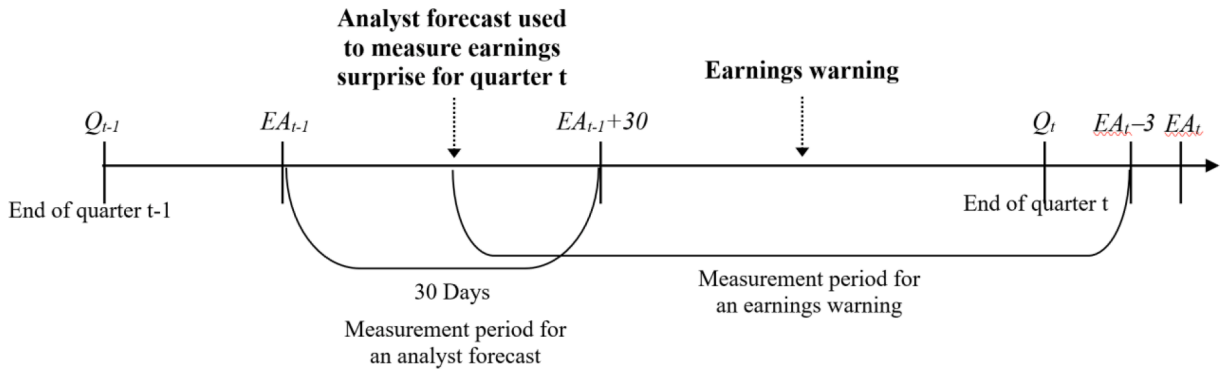
Fig. 1. Timeline for measurement of earnings warnings. This figure illustrates how we measure earnings warnings. EA_{t-1} and EA_t denote the earnings announcement date of a sample firm for quarters *t-1* and *t*, respectively. After collecting the earliest median consensus analyst forecast of earnings for quarter *t* within the 30-day interval from EA_{t-1}, we calculate an earnings surprise for quarter *t* as the difference between the actual earnings for quarter *t* and the analyst forecast for that quarter scaled by the share price at the end of quarter *t-1*. A management earnings forecast is classified as a warning if it is most recently issued between the analyst forecast date and three days before EA_t and is below the analyst forecast.

3.2. Research design

To test our hypothesis that managers are more likely to issue earnings warnings when they have included *more verifiable* misstatements in prior disclosures than *less verifiable* ones, we estimate the following equation:

$$P(Warn = 1) = F(\beta_0 + \beta_1 More + \beta_2 Less + \beta_3 Size + \beta_4 MTB + \beta_5 |\Delta EPS| + \beta_6 RetVol + \beta_7 CAR(-60, +1) + \beta_8 AnalystForecastError$$
$$+ \beta_9 Analysts + \beta_{10} LitRisk + \beta_{11} PreForecast + \beta_{12} NoForecast + \beta_{13} OptimisticForecast + IndustryandYearFixedEffects + \varepsilon),$$
$$(1)$$

3.2.1. Earnings warnings

Following prior literature, we operationalize earnings warnings by management earnings forecasts that are intended to mitigate impending stock price decline due to negative earnings surprises.[11] Specifically, we define *Warn* as an indicator variable that equals one if the most recent management earnings forecast issued between the analyst forecast date and three days before the earnings announcement date is below the analyst consensus median forecast, and zero otherwise. Our timeline for the measurement of earnings warnings is depicted in Fig. 1.

3.2.2. Verifiability of prior misstatements

We are mainly interested in the verifiability of misstatements of earnings-related forward-looking information. To operationalize the verifiability, we first search for alleged misstatements in class action complaints to identify managers' misstatements related to previously issued forward-looking earnings information.[12] By manually reading plaintiffs' allegations in class action complaints, we classify lawsuits into two groups depending on whether they involve *more verifiable* misstatements or not and generate two indicator variables, *More* and *Less*, respectively. *More* equals one if the case involves explicitly untrue statements or accounting number-related problems (e.g., Generally Accepted Accounting Principles (GAAP) violations, improper revenue recognitions, channel stuffing, or asset write-offs) and zero otherwise; *Less* equals one if the case involves neither explicitly untrue statements nor accounting number-related problems (see Appendix 2 for examples).[13][14] Given managers' incentives to reduce litigation costs by issuing earnings warnings, we expect that the coefficients on both *More* (β_1) and *Less* (β_2) are positive. However, to the extent that managers perceive *less verifiable* misstatements as frivolous, we predict that the coefficient on *Less* (β_2) is closer to zero. Most importantly, H1 predicts that the

---

[11] Issuing a management earnings forecast is one way to convey earnings warnings (Donelson et al. 2012; Li et al. 2016). Managers could use other channels to convey bad earnings news information. Nevertheless, we focus on management forecasts to measure earnings warnings as: 1) they are widely available, and 2) they include private information that managers hold and want to disseminate. We note that this approach likely leads to lower power of test and works against finding significant results. For robustness, we consider the possibility that other channels deliver bad earnings news using Donelson et al. (2012)'s measure and find that our results hold with this control (see Section 5.4).

[12] A selection bias may exist for this measure. Specifically, the misstatement sample may not include firms that misstate material information but are not subsequently sued (i.e., Type II error). In contrast, the misstatement sample may include firms that do not misstate material information but are subsequently sued in a frivolous attempt by plaintiffs' attorneys to secure a large payout (i.e., Type I error). These classification errors are likely to add noise and reduce the power of the tests.

[13] Channel stuffing can be regarded as a method of manipulating inventory accruals.

[14] Out of 164 *More* cases, we identified 35 untrue statements (21%), 56 GAAP violations (34%), 42 improper revenue recognitions (26%), 8 channel stuffing (5%), 18 asset write-offs (11%), and 30 other accounting problems (18%), which include multiple classification schemes in some lawsuit cases.

Table 2
Descriptive statistics.

Panel A. Summary statistics by verifiability of misstatements (Mean)

Variables	(1) More	(2) Less	(3) No misstatement	(1) - (2)	(2) - (3)
Size	7.243	7.290	6.329	−0.047	0.961***
MTB	3.967	7.489	2.854	−3.522	4.635
|ΔEPS|	0.861	0.559	0.748	0.302**	−0.189
RetVol	0.035	0.034	0.034	0.001	0.000
CAR (-60,+1)	−0.223	−0.165	−0.042	−0.058*	−0.123***
ForecastError	−0.001	0.000	−0.005	−0.001	0.005***
Analysts	8.494	9.214	5.867	−0.720	3.347***
LitRisk	0.052	0.064	0.032	−0.012**	0.032***
PreForecast	0.360	0.342	0.316	0.018	0.026
NoForecast	0.835	0.776	0.873	0.059	−0.097***
OptimisticForecast	0.159	0.209	0.096	−0.050	0.113***
N	164	196	41,325	41,685	

Panel B. Warnings ratios by verifiability of misstatements

Variables	(1) More	(2) Less	(3) No misstatement	Raw total	Chi-square
Warn = 1	67	51	4,708	4,826	
Warn = 0	97	145	36,617	36,859	
Column total	164	196	41,325	41,685	
Warnings ratio	40.9%	26.0%	11.4%	11.6%	8.916***

Appendix A describes variable definitions. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively (two-tailed tests).

coefficient on *More* (β_1) is greater than that on *Less* (β_2).

3.2.3. Control variables

We control for variables that are known to be associated with managers' earnings forecast decisions. We control for firm size, which is positively associated with the incidence of earnings warnings, using a logarithm of market value (*Size*) at the beginning of the quarter. To capture firm risk, we include the market to book ratio (*MTB*), earnings volatility ($|\Delta EPS|$), and stock return volatility (*RetVol*). *MTB* is measured by the ratio of the market value of equity relative to the book value of equity at the beginning of the quarter. $|\Delta EPS|$ is measured as the absolute value of the current EPS change.[15] *RetVol* is measured as the standard deviation of daily stock returns over the one-year period prior to the beginning of the quarter.

We include cumulative abnormal stock return (*CAR (-60,+1)*) to simultaneously control for earnings surprises, revisions in future earnings forecasts, and earnings informativeness (Lee et al. 2012). *CAR (-60,+1)* is the cumulative market adjusted stock returns over the 62-day window that ends on the day after the earnings announcement for quarter *t*. We also include analyst forecast error (*ForecastError*) to directly control for an earnings surprise, which is predicted to be negatively associated with the probability of early bad news disclosures. *ForecastError* is calculated as the difference between the actual earnings and the earliest median analyst forecast within the 30-day interval from the prior earnings announcement date scaled by the share price at the end of the previous quarter. We control for the managers' reputation-based disclosure incentive by including the number of analysts following for the current quarter (*Analysts*). Firms followed by a larger number of analysts may have stronger incentives to issue earnings warnings in order to maintain a reputation for credible communication (Skinner 1997; Graham et al. 2005). We also include ex-ante litigation risk (*LitRisk*) estimated following Kim and Skinner (2012). Controlling for ex-ante litigation risk is important because managers' risk assessments based on publicly available information may confound our results (see Appendix C and Table C1).

The decision to provide voluntary disclosure is sticky. Specifically, some firms have a non-disclosure policy whereas other firms tend to provide frequent disclosures. In order to control for a firm's tendency to disclose, we include the occurrence of a previous management forecast (*PreForecast*), which equals one if the firm issues at least one management earnings forecast for the last three years and zero otherwise. We also control for the firms that did not previously provide a management earnings forecast (*NoForecast*). *NoForecast* equals one if the firm issued no management earnings forecast for the prior four quarters and zero otherwise. We add an incidence of previous optimistic forecasts (*OptimisticForecast*) because managers are likely to issue corrective forecasts if they previously provided optimistic forecasts during the prior four quarters (Heflin et al. 2012). A management earnings forecast is optimistic if the forecast for the current quarter exceeds subsequently reported actual earnings. Definitions of variables used to test our hypothesis are included in Appendix A.

Equation (1) also includes year and industry-fixed effects to control for time and industry warnings trends. We winsorize all

---

[15] The use of the current period earnings volatility diminishes the survivorship bias associated with the use of a longer time series measure of earnings volatility. The results are similar when we define earnings volatility as the standard deviation of quarterly earnings change over the three-year period that spans up to the end of the previous quarter.

continuous variables at the 1% and 99% levels to mitigate the impact of influential observations in drawing inferences.

4. Empirical results

4.1. Descriptive statistics

Panel A of Table 2 reports the mean values of control variables across misstatement groups. Firms that misstate forward-looking earnings information (i.e., firms either in the group of *More* in column (1) and *Less* in column (2)) have a larger firm size, larger negative stock returns, a greater number of analysts following and a higher tendency of previous optimistic forecasts than the firms without misstatements (*No misstatement* in column (3)). Panel B of Table 2 provides the warnings ratios in each misstatement group. As expected, the warnings ratio is higher for the *More* group (40.9%) than for the *Less* group (26.0%). The ratio for firms without misstatements (11.4%) is lower than for the *More* and *Less* groups. A chi-square statistic of 8.916, significant at $p < 0.01$, indicates that these differences are statistically significant.[16]

Table 3 presents Pearson correlations among the variables. As predicted, *More* and *Less* are significantly and positively correlated with earnings warnings. Though univariate, the correlation between *More* and *Warn* (0.058) is higher than that between *Less* and *Warn* (0.031), consistent with our prediction.

4.2. Regression results

4.2.1. Main result

In this section, we report our main regression results. Our hypothesis predicts that managers are more likely to issue earnings warnings when they have made *more verifiable* misstatements in prior disclosures than *less verifiable* ones. Therefore, we expect β_1 to be greater than β_2.[17]

Table 4 presents the results of estimating the regression equation (1). First, we find that the coefficient on *More* (β_1) is significantly positive (0.800, $p < 0.01$), suggesting that managers are more likely to issue earnings warnings when they have used *more verifiable* misstatements in prior disclosures than when they have made no misstatements. Second, we show that the coefficient on *Less* (β_2) is significantly positive (0.396, $p < 0.01$), suggesting that managers are more likely to issue earnings warnings when they have made *less verifiable* misstatements in prior disclosures than in the absence of misstatements. Third and most importantly, we show that the coefficient on *More* is statistically greater than the coefficient on *Less* ($\beta_1 - \beta_2 = 0.404$, $p < 0.05$), indicating that firms with *more verifiable* misstatement evidence are more likely to issue earnings warnings than firms with *less verifiable* misstatement evidence, consistent with our hypothesis. Overall, our results indicate that misstatement verifiability contributes to managers' decisions about whether to issue earnings warnings.

To assess the economic significance of our findings, we calculate marginal effects for each parameter estimate, which are akin to slope coefficients in an ordinary least squares (OLS) regression. The probabilities of firms in the *More* and *Less* groups issuing an earnings warning are approximately 11.7% and 5.8% higher, respectively, than the probability of firms not involved in misstatements (*No misstatement*) issuing an earnings warning.

Most coefficients for the control variables are significant and their signs are generally consistent with the predictions in prior literature. Specifically, *Size*, *Analysts*, *PreForecast* and *OptimisticForecast* are positively and significantly related to earnings warnings. On the other hand, *|ΔEPS|*, *RetVol*, *CAR (-60,+1)* and *ForecastError* are negatively and significantly related to earnings warnings.[18]

4.2.2. Endogeneity concern

We note that prior studies discuss an endogeneity concern arising from the relation between disclosure choices and litigation outcomes (Field et al. 2005; Cazier et al. 2020; Houston et al. 2019; Huang et al. 2020). In addition to attempting to control for ex-ante

---

[16] The tendency to issue earnings warnings with stand-alone quarterly earnings forecasts has significantly declined in the last decade (from 15.0% in 1996–2010 to 3.8% in 2011–2019 during our sample period) due to an increasing tendency to issue bundled guidance. Despite the rarity of stand-alone quarterly earnings forecasts and especially earnings warnings in the last decade, we argue that public earnings warnings in the form of management earnings forecasts can still be effective litigation cost-reducing tools. Lu and Skinner (2020) document that managers continue to provide non-bundled, stand-alone guidance mainly for warnings purposes despite the prevalence of bundled guidance. Specifically, they find that over 90% of stand-alone guidance released in bad news quarters are preemptive earnings warnings. In addition, they find that preemption rates for the negative news cases do not differ between 1998 and 2009 and 2010–2019, suggesting that managers still tend to provide earnings warnings when preemptions of negative earnings news are needed. Maslar et al. (2021) also document that investors view bad news from unbundled forecasts during economic downturns as more credible than bad news from bundled forecasts.

[17] The underlying presumption is that a settlement in favor of plaintiffs is more likely for *more verifiable* cases that are based on hard evidence of misstatements than it is for cases with *less verifiable* evidence and, thus, managers are more likely to issue earnings warnings to reduce potential litigation costs when they face a lawsuit based on hard evidence. To validate our presumption, we test the relation between the verifiability of previous misstatements and lawsuit outcomes using the likelihood of being settled. As predicted, in an untabulated result, we find that cases involving *more verifiable* misstatements are more likely to be settled than the cases involving *less verifiable* misstatements.

[18] For the robustness check, we rerun the regressions using earnings warnings issued after the fiscal quarter ends only (i.e., earnings pre-announcement warnings) and find that our main results are qualitatively similar but become weaker with the earnings preannouncement warnings. The weaker results are attributable to the small size of warnings by the new definition (i.e., the warnings ratio decreases from 11.6% to 5.8%).

Table 3
Pearson correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) *Warn*													
(2) *More*	0.058												
	0.000												
(3) *Less*	0.031	−0.004											
	0.000	0.378											
(4) *Size*	0.070	0.034	0.039										
	0.000	**0.000**	**0.000**										
(5) *MTB*	0.000	0.001	0.006	−0.003									
	0.997	0.795	0.228	0.586									
(6) *|ΔEPS|*	−0.006	0.000	−0.001	0.029	0.000								
	0.194	0.943	0.896	**0.000**	0.937								
(7) *RetVol*	0.006	0.006	0.000	−0.423	0.001	−0.008							
	0.227	0.199	0.958	**0.000**	0.793	0.090							
(8) *CAR (-60,+1)*	−0.134	−0.054	−0.041	0.010	0.001	−0.005	−0.016						
	0.000	**0.000**	**0.000**	**0.038**	0.825	0.274	**0.001**						
(9) *ForecastError*	−0.063	0.009	0.014	0.113	0.004	0.027	−0.085	0.038					
	0.000	0.068	**0.006**	**0.000**	0.379	**0.000**	**0.000**	**0.000**					
(10) *Analysts*	0.090	0.032	0.045	0.624	0.007	−0.002	−0.179	0.011	0.058				
	0.000	**0.000**	**0.000**	**0.000**	0.141	0.760	**0.000**	**0.021**	**0.000**				
(11) *LitRisk*	−0.145	0.029	0.051	0.229	0.004	0.034	−0.122	0.093	0.438	0.225			
	0.000	**0.000**	**0.000**	**0.000**	0.444	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**			
(12) *PreForecast*	0.307	0.006	0.004	0.045	−0.004	−0.010	0.019	−0.046	−0.134	0.100	−0.262		
	0.000	0.227	0.435	**0.000**	0.419	**0.034**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		
(13) *NoForecast*	−0.256	−0.007	−0.020	−0.109	0.001	0.006	0.071	0.005	0.021	−0.166	0.070	−0.496	
	0.000	0.151	**0.000**	**0.000**	0.871	0.230	**0.000**	0.347	**0.000**	**0.000**	**0.000**	**0.000**	
(14) *OptimisticForecast*	0.276	0.013	0.026	0.089	−0.001	−0.005	−0.062	−0.032	−0.024	0.137	−0.041	0.421	−0.856
	0.000	**0.007**	**0.000**	**0.000**	0.887	0.327	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Appendix A describes variable definitions. The two tailed *p*-values are boldfaced when they are lower than 0.05.

Table 4
The effect of previous misstatement verifiability on earnings warnings.

Variables	Dep.Var = Warn
More	0.800***
	(6.224)
Less	0.396***
	(3.499)
Size	0.054***
	(4.353)
MTB	0.007*
	(1.748)
|ΔEPS|	−0.062***
	(-4.314)
RetVol	−5.243***
	(-4.902)
CAR (-60,+1)	−1.105***
	(-20.120)
ForecastError	−1.445**
	(-2.569)
Analysts	0.030***
	(8.083)
LitRisk	−1.017
	(-0.761)
PreForecast	0.524***
	(19.743)
NoForecast	−0.116*
	(-1.763)
OptimisticForecast	0.645***
	(10.091)
p-value for [*More = Less*]	0.017
Year FE	Yes
Industry FE	Yes
N	41,275
Pseudo R^2	0.262

This table presents the Probit regression results of the effect of the verifiability of previous misstatements on earnings warnings. *Warn* is an indicator variable that equals one if the firm issues an earnings warning and zero otherwise. *More* is an indicator variable that equals one if the lawsuit case involves explicitly untrue statements or accounting number-related problems and zero otherwise. *Less* is an indicator variable that equals one if a lawsuit case involves neither explicitly untrue statements nor accounting number-related problems and zero otherwise. Appendix A describes variable definitions. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively (two-tailed tests).

litigation risk (*LitRisk*) in the regression model, we address the endogeneity issue by 1) applying entropy balancing, 2) adding firm-fixed effects and 3) employing both 1) and 2).

First, we use entropy balancing technique to match treatment and control observations (e.g., Shroff et al. 2017; Ham et al., 2023; Basu, et al. 2022; Black et al. 2022). In our setting, this approach is expected to reduce noise that would otherwise be present in our estimation because the average treatment observation may not be easily comparable to the average control observation. In particular, entropy balancing is well suited to our setting because there are a small number of treatment observations (i.e., misstatements), and these observations are not easily matched to a single control firm (Basu et al. 2022).[19]

Entropy balancing uses an iterative process to reweight observations in the control sample (non-misstatement firms) to achieve covariate balance relative to the observations in the treatment sample (misstatement firms). Thus, in the entropy-balanced sample, the first three moments (mean, variance, skewness) of the control variables are nearly identical for misstatement firms versus non-misstatement firms. Effectively, non-misstatement firms with characteristics similar to misstatement firms receive more weight in our estimations relative to non-misstatement firms with dissimilar characteristics. Entropy balancing discards zero or very few observations, which increases power relative to propensity score matching and avoids limiting the control sample to one (randomly) matched observation. Our entropy balancing method balances non-misstatement firms with misstatement firms by weighting based on control variables included in equation (1). The weighting process produces covariate balance up to the third moment, thus producing a control group of non-misstatement firm-quarters that are similar to the misstatement firm-quarters.

The regression results using entropy-balanced sample are reported in Table 5. Panel A of Table 5 confirms that the mean, standard deviation and skewness of all variables are not discernible between the two groups after balancing. Panel B of Table 5 shows that the results are generally consistent with those in Table 4. Column (1) reports the regression results using the weights for entropy balancing.

---

[19] Earlier work on the relation between litigation risk and earnings warnings typically employed a matched sample research design to address an endogeneity concern (e.g., Field et al. 2005; Johnson et al. 2007; Donelson et al. 2012).

Table 5

The effect of verifiability on earnings warnings: endogeneity concerns.

Panel A. Covariate balances after entropy balancing

Variables	Treatment				Control		
	Mean	Variance	Skewness		Mean	Variance	Skewness
Size	7.258	2.673	−0.023		7.254	2.675	−0.019
MTB	4.480	20.727	2.080		4.477	20.717	2.082
|ΔEPS|	0.655	0.791	2.684		0.655	0.791	2.685
RetVol	0.035	0.000	0.991		0.035	0.000	0.993
CAR (-60,+1)	−0.194	0.061	0.424		−0.194	0.061	0.423
ForecastError	−0.001	0.000	0.605		−0.001	0.000	0.594
Analysts	8.669	35.676	0.883		8.663	35.666	0.884
LitRisk	0.058	0.003	0.242		0.058	0.003	0.244
PreForecast	0.350	0.228	0.629		0.351	0.228	0.626
NoForecast	0.803	0.159	−1.522		0.802	0.159	−1.517
OptimisticForecast	0.186	0.152	1.613		0.187	0.152	1.608

Panel B. Regression results

		Dep.Var = *Warn*	
	(1)	(2)	(3)
Variables	Entropy	Firm-fixed effects	Entropy + Firm-fixed effects
More	0.825***	0.215***	0.158***
	(5.856)	(9.102)	(23.247)
Less	0.415***	0.092***	0.039***
	(3.673)	(4.273)	(6.424)
p-value for [*More = Less*]	0.018	0.000	0.000
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	No	No
Firm FE	No	Yes	Yes
N	41,275	41,685	41,685
Pseudo R^2	0.343		
Adjusted_R^2		0.274	0.754

This table presents the regression results that account for endogeneity concerns. In column (1), we report the Probit regression result using weights obtained from entropy balancing. In column (2), we report the OLS regression result with firm-fixed effects. In column (3), we report the OLS regression result with firm-fixed effects using weights obtained from entropy balancing. *Warn* is an indicator variable that equals one if the firm issues an earnings warning and zero otherwise. *More* is an indicator variable that equals one if the lawsuit case involves explicitly untrue statements or accounting number-related problems and zero otherwise. *Less* is an indicator variable that equals one if a lawsuit case involves neither explicitly untrue statements nor accounting number-related problems and zero otherwise. Appendix A describes variable definitions. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively (two-tailed tests).

The coefficients on *More* and *Less* are 0.825 and 0.415, respectively, and both are significant at p < 0.01. Importantly, the former is statistically bigger than the latter, confirming our key findings that managers are more likely to issue earnings warnings when they have made *more verifiable* misstatements in prior disclosures than *less verifiable* ones.[20] Column (2) reports the OLS regression results with firm-fixed effects. Similar to the results in the previous column, we find statistically significant coefficients on *More* and *Less* and the former is statistically greater than the latter. In column (3), we report the OLS regression results including firm-fixed effects with weights for entropy balancing. The results confirm our main findings. In conclusion, our primary results are robust to using entropy balancing and including firm-fixed effects.[21]

4.3. Cross-sectional tests

In this section, we investigate whether the relation between the verifiability of prior misstatements and earnings warnings is affected by three moderators: 1) general counsel, 2) insider selling and 3) ex-ante litigation risk. The cross-sectional analyses have two important benefits. First, we attempt to gain further insights into the relationship between the verifiability of misstatements and managers' warning decisions. Second, we expect these analyses to help strengthen the causality of our key findings.

---

[20] McMullin and Schonberger (2022) alert that researchers using entropy balancing may suffer from unstable estimates sensitive to a minor change in the research design or control group. They emphasize the importance of checking the maximum weight assigned to a single control sample observation when applying entropy balancing. The maximum value of the weights assigned to observations in our control group is 0.927, suggesting that no single observation in the control group receives weight above 1.

[21] Our results are robust to when using the propensity score matched sample. Our results also hold when estimating OLS with firm-fixed effects using the propensity score matched sample.

Table 6

Cross-sectional tests.

Panel A. The presence of a general counsel	
Variables	Dep.Var = *Warn*
a. More (GeneralCounsel = 1)	0.759***
	(3.813)
b. Less (GeneralCounsel = 1)	0.085
	(0.438)
c. More (GeneralCounsel = 0)	0.864**
	(2.462)
d. Less (GeneralCounsel = 0)	0.454*
	(1.735)
p-value for [a = b]	0.016
p-value for [c = d]	0.349
Controls	Yes
Year FE	Yes
Industry FE	Yes
N	24,780
Pseudo R^2	0.302

Panel B. Ex-ante litigation risk	
Variables	Dep.Var = *Warn*
a. More (HighLitRisk = 1)	0.721***
	(5.043)
b. Less (HighLitRisk = 1)	0.344***
	(2.713)
c. More (HighLitRisk = 0)	1.053***
	(3.603)
d. Less (HighLitRisk = 0)	0.566**
	(2.205)
p-value for [a = b]	0.048
p-value for [c = d]	0.210
Controls	Yes
Year FE	Yes
Industry FE	Yes
N	41,275
Pseudo R^2	0.262

Panel C. Insider selling	
Variables	Dep. Var = *Warn*
a. More (InsiderSelling = 1)	0.989***
	(4.572)
b. Less (InsiderSelling = 1)	0.585***
	(3.797)
c. More (InsiderSelling = 0)	0.679***
	(4.106)
d. Less (InsiderSelling = 0)	0.199
	(1.127)
p-value for [a = b]	0.132
p-value for [c = d]	0.044
Controls	Yes
Year FE	Yes
Industry FE	Yes
N	41,275
Pseudo R^2	0.262

This table presents the cross-sectional results. In Panel A, we consider the presence of a general counsel in the top management team as a moderator. In Panel B, we consider ex-ante litigation risk following Kim and Skinner (2012) as a moderator. In Panel C, we consider managers' insider selling during the class action period as a moderator. *Warn* is an indicator variable that equals one if the firm issues an earnings warning and zero otherwise. *More (GeneralCounsel = 1)* is a group indicator variable that equals one if the observation with a general counsel involves *more verifiable* misstatements and zero otherwise. *Less (GeneralCounsel = 1)* is a group indicator variable that equals one if the observation with a general counsel involves *less verifiable* misstatements and zero otherwise. *More (GeneralCounsel = 0)* is a group indicator variable that equals one if the observation without a general counsel involves *more verifiable* misstatements and zero otherwise. *Less (GeneralCounsel = 0)* is a group indicator variable that equals one if the observation without a general counsel involves *less verifiable* misstatements and zero otherwise. *More (HighLitRisk = 1)* is a group indicator variable that equals one if the observation with high ex-ante litigation risk involves *more verifiable* misstatements and zero otherwise. *Less*

(HighLitRisk = 1) is a group indicator variable that equals one if the observation with high ex-ante litigation risk involves *less verifiable* misstatements and zero otherwise. *More (HighLitRisk = 0)* is a group indicator variable that equals one if the observation with low ex-ante litigation risk involves *more verifiable* misstatements and zero otherwise. *Less (HighLitRisk = 0)* is a group indicator variable that equals one if the observation with low ex-ante litigation risk involves *less verifiable* misstatements and zero otherwise. We identify *HighLitRisk* based on the sample median value of *LitRisk*. *More (InsiderSelling = 1)* is a group indicator variable that equals one if the observation involves both more verifiable misstatements and insider selling during the class action period and zero otherwise. *Less (InsiderSelling = 1)* is a group indicator variable that equals one if the observation with a general counsel involves both less verifiable misstatements and insider selling during the class action period and zero otherwise. *More (InsiderSelling = 0)* is a group indicator variable that equals one if the observation involves more verifiable misstatements and no insider selling during the class action period and zero otherwise. *Less (InsiderSelling = 0)* is a group indicator variable that equals one if the observation involves less verifiable misstatements and no insider selling during the class action period and zero otherwise. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively (two-tailed tests).

4.3.1. General counsels

First, we examine whether the association between the verifiability of prior misstatements and earnings warnings is affected by the presence of a corporate general counsel (GC) in top management. GCs, as legal experts, play an important gatekeeping role (Kwak et al. 2012; Hopkins et al. 2015; Abernathy et al. 2019; Black et al. 2022). Kwak et al. (2012) document that GCs help to shape firms' disclosure policies to preemptively mitigate litigation risk, empirically showing that firms with GCs in top management (GC firms) are more likely to issue management forecasts than non-GC firms. Abernathy et al. (2019) show that GC firms exhibit lower compliance and audit risk than non-GC firms. Hopkins et al. (2015) provide evidence that GC firms are more likely to comply with GAAP than non-GC firms. In practice, a survey of general counsels indicates that compliance is one of the most important GC responsibilities (Association of Corporate Counsel 2022). In the context of our research, when firms face high litigation costs— which are more likely to come from *more verifiable* than *less verifiable* misstatements—GCs would prompt their firms to reduce these costs by issuing earnings warnings. Hence, we predict that the positive association between the verifiability of prior misstatements and earnings warnings is more pronounced for GC firms.

Using BoardEx, we identify firm-quarters that include a GC in top management. We decompose *More* and *Less* groups into each of their subgroups conditional on the presence of a GC. Specifically, we decompose *More* into *More (GeneralCounsel = 1)* and *More (GeneralCounsel = 0)*, and *Less* into *Less (GeneralCounsel = 1)* and *Less (GeneralCounsel = 0)*.

The result in Panel A of Table 6 confirms our prediction. We find that the coefficients on *More (GeneralCounsel = 1)* and *More (GeneralCounsel = 0)* are positive and statistically significant. More importantly, the first F-test result shows that the likelihood of earnings warnings is significantly higher (p-value < 0.05) for *More (GeneralCounsel = 1)* and *Less (GeneralCounsel = 1)*, supporting the view that GCs help their firms reduce litigation costs by issuing earnings warnings when their prior disclosures involve *more verifiable* misstatements. On the other hand, the second F-test result shows that there is no significant difference in warnings tendency between *More (GeneralCounsel = 0)* and *Less (GeneralCounsel = 0)*, indicating that the relation between the verifiability of misstatements and earnings warnings disappears when GCs are not present.

4.3.2. Ex-ante litigation risk

Next, we turn our attention to ex-ante litigation risk, which is an important factor for managers' decision-making. Johnson et al. (2001) show that firms issue more earnings and sales forecasts post-PSLRA and the change in disclosure increases with firms' ex-ante litigation risk. These findings indicate that firms with higher ex-ante litigation risk receive greater benefits from litigation risk reduction attributed to the PSLRA. Similarly, we expect that managers who have committed *more verifiable* misstatements would have greater incentives to reduce litigation costs through early warnings if ex-ante litigation risk is higher.

Using the sample median value of ex-ante litigation risk (*LitRisk*) estimated following Kim and Skinner (2012), we test whether the relation between earnings warnings and the verifiability of prior misstatements differs between high versus low ex-ante litigation risk groups. Specifically, we decompose *More* into *More (HighLitRisk = 1)* and *More (HighLitRisk = 0)* conditional on the level of ex-ante litigation risk; similarly, we decompose *Less* into *Less (HighLitRisk = 1)* and *Less (HighLitRisk = 0)*.

The result in Panel B of Table 6 confirms our prediction. We find that all four coefficients (i.e., *More (HighLitRisk = 1)*, *Less (HighLitRisk = 1)*, *More (HighLitRisk = 0)* and *Less (HighLitRisk = 0)*) are positive and significant (p-value < 0.05). More importantly, the first F-test result shows that the likelihood of earnings warnings is significantly higher (p-value < 0.05) for *More (HighLitRisk = 1)* and *Less (HighLitRisk = 1)*, suggesting that managers making *more verifiable* misstatements are more likely to issue earnings warnings if ex-ante litigation risk is high. On the other hand, the second F-test result shows that there is no significant difference of warnings likelihood between *More (HighLitRisk = 0)* and *Less (HighLitRisk = 0)*.

4.3.3. Insider selling

Lastly, we test whether the association between verifiability of prior misstatements and earnings warnings is contingent on insider selling activities during the class action period. The SEC stipulates that anyone with material, non-public information must either disclose that information or abstain from trading (i.e., the "disclose or abstain" rule). Prior literature has examined whether managers exhibit opportunistic behavior in terms of disclosure and insider trading decisions and whether insider trading increases litigation risk. Billings and Buslepp (2016) provide empirical evidence that managers tend to issue inaccurate downward guidance before engaging in insider selling, consistent with managers' strategic guidance behavior. Billings and Cedergren (2015) find that insider selling and

managers' guidance decisions jointly influence litigation risk, claiming that it is important to consider managers' trading incentives when examining their earnings warning decisions.[22] Rogers et al. (2011) show that the positive relation between an optimistic tone of disclosure and the likelihood of being sued is greater when managers engage in abnormally high insider selling.

We predict that the association between the verifiability of prior misstatements and earnings warnings is less pronounced with the existence of insider selling activities because plaintiffs could use insider selling as predominant hard evidence of misconduct during the class action period regardless of the verifiability of prior misstatements (Johnson et al. 2007). To test this, we manually identify, for each firm in our sample, whether managers were involved in insider selling activities during the class action lawsuit period. We then decompose *More* into *More (InsiderSelling = 1)* and *More (InsiderSelling = 0)* conditional on the existence of insider selling during the class action period; similarly, we decompose *Less* into *Less (InsiderSelling = 1)* and *Less (InsiderSelling = 0)*.

Panel C of Table 6 reports regression results. We find that the coefficients on *More (InsiderSelling = 1)*, *Less (InsiderSelling = 1)*, and *More (InsiderSelling = 0)* are positive and significant (p-value < 0.05). More importantly, the first F-test result shows that there is no significant difference between *More (InsiderSelling = 1)* and *Less (InsiderSelling = 1)* indicating that the difference in warnings tendency between *More* and *Less* groups disappears with the existence of insider selling. We interpret the result as evidence that managers recognize the heightened litigation costs from the insider selling, and thus, they have an incentive to issue earnings warnings to reduce litigation costs regardless of the verifiability of prior misstatements. On the other hand, the second F-test result shows that there is a significant difference between *More (InsiderSelling = 0)* and *Less (InsiderSelling = 0)* (p-value < 0.05) indicating that the verifiability of prior misstatements is an important driver of managers' earnings warning decisions if insider selling did not take place.

4.4. The relation between warnings and litigation outcomes

Our hypothesis is based on the presumption that earnings warnings are more beneficial for firms that have made *more verifiable* misstatements, as opposed to *less verifiable* ones, by reducing litigation costs to a greater degree. In this section, we test this by examining the effect of warnings on litigation outcomes—*settled* or *dismissed*—conditioning on the level of verifiability of prior misstatements.[23] Specifically, we first expect that for lawsuit cases involving *more verifiable* misstatements, earnings warnings would lower the likelihood of settlement. However, for cases involving *less verifiable* misstatements, the likelihood of a settlement may not be significantly lower for warning firms than that for non-warning firms. This is because lawsuit complaints based on *less verifiable* misstatements tend to be frivolous, and thus, are more likely to be dismissed regardless of whether or not firms have issued earnings warnings.

To test the relation between warnings and litigation outcomes, we use the sample of firms against which a lawsuit is already filed and specify the following equation:

$$
\begin{aligned}
P(Settled = 1) \\
= F(\varphi_0 + \varphi_1 MoreWarn + \varphi_2 MoreNoWarn + \varphi_3 LessWarn + \varphi_4 ClassPeriodCAR + \Phi_5 ClassPeriodShareTurnver \\
+ \varphi_6 ClassPeriodInsiderSelling + \varepsilon),
\end{aligned}
\tag{2}
$$

Settled is an indicator variable that equals one if the lawsuit case is settled and zero otherwise (i.e., dismissed). Settlement is a costlier outcome than dismissal for sued firms. Thus, we use the probability of a lawsuit settlement to measure litigation costs once the lawsuit has been filed. *MoreWarn* is a group indicator variable that equals one if the firm made misstatements containing *more verifiable* information and warns of earnings, and zero otherwise. *MoreNoWarn* is a group indicator variable that equals one if the firm made misstatements containing *more verifiable* information but does not warn of earnings, and zero otherwise. *LessWarn* is a group indicator variable that equals one if the firm made misstatements containing *less verifiable* information and warns of earnings, and zero otherwise. *LessNoWarn* is a benchmark group which is captured on φ_0. We predict that the likelihood of a settlement is lower for warning firms than that for non-warning firms in the *More* group, (i.e., $\varphi_1 - \varphi_2 < 0$), but it is not significantly different between warning firms and non-warning firms in the *Less* group (i.e., $\varphi_3 = 0$). We also predict that the settlement reduction effect of warnings is greater for the *More* group than *Less* group (i.e., $(\varphi_1 - \varphi_2) - \varphi_3 < 0$).

We control for market-adjusted monthly stock returns accumulated over the class period (*ClassPeriodCAR*) and the average daily shares turnover during the class period (*ClassPeriodShareTurnover*). Skinner (1997) uses these variables to estimate lawsuit damages, which, in turn, are likely to affect the probability and amount of settlement. We also include insider selling incidence during the class period (*ClassPeriodInsiderSelling*) as a control variable.

Table 7 shows the regression results. In the *More* group, the likelihood of a settlement is significantly lower for warning firms than that for silent firms (i.e., $\varphi_1 - \varphi_2 = -0.557$, $p < 0.05$). However, in the *Less* group, the likelihood of a settlement is not significantly different between warning firms and silent firms ($\varphi_3 = 0.026$, $p > 0.1$). This finding indicates that firms in the *More* group reduce litigation costs by providing warnings and, thus, have an incentive to issue warnings. Firms in the *Less* group, meanwhile, do not reduce

---

[22] Billings and Cedergren (2015) document that managers have incentives to remain silent *before* engaging in insider selling, but this relation is weaker for firms with high ex-ante litigation risk. They further show that the silence combined with insider selling exacerbates litigation risk. Our study, in contrast, examines managers' warning decisions *after* insider selling during the class action lawsuit period.

[23] Cutler et al. (2019) document that judges inspect disclosures made by managers to determine whether or not to dismiss a disclosure-driven class action lawsuit. Following Cutler et al. (2019), we focus on whether a lawsuit is dismissed or settled instead of settlement amount because settlement amount is affected by many other factors.

Table 7
The relation between warning decisions and litigation outcomes.

Variables	Dep.Var =
	Settled
MoreWarn	0.491*
	(1.895)
MoreNoWarn	1.048***
	(4.782)
LessWarn	0.026
	(0.090)
ClassPeriodCAR	−0.506**
	(-1.981)
CLassPeriodShareTurnover	0.019
	(0.862)
ClassPeriodInsiderSelling	−0.252
	(-1.229)
p-value for [*MoreWarn = MoreNoWarn*]	0.038
p-value for [*MoreWarn – MoreNoWarn = LessWarn*]	0.090
Year FE	Yes
Industry FE	Yes
N	337
Pseudo R^2	0.242

This table reports the Probit regression result on the relation between warnings and the likelihood of a settlement according to the verifiability of misstatements. *Settled* is an indicator variable that equals one if the lawsuit case is settled and zero otherwise (i.e., dismissed). *MoreWarn* is a group indicator variable that equals one if the firm made misstatements containing *more verifiable* information and warns of earnings and zero otherwise. *MoreNoWarn* is a group indicator variable that equals one if the firm made misstatements containing *more verifiable* information but does not warn of earnings and zero otherwise. *LessWarn* is a group indicator variable that equals one if the firm made misstatements containing *less verifiable* information and warns of earnings and zero otherwise. *ClassPeriodCAR* is a market-adjusted stock return cumulated over the class period. *ClassPeriodShareTurnover* is an average daily turnover (volume/share outstanding) during the class period. *ClassPeriodInsiderSelling* is an indicator variable that equals one if insider selling exists in the class action period and zero otherwise. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively (two-tailed tests).

litigation costs by issuing warnings and, thus, lack an incentive to warn of earnings. We also confirm that the effect of warnings in lowering the likelihood of a settlement is significantly greater for the *More* group relative to the *Less* group (($\varphi_1 - \varphi_2$) – φ_3 = -0.583, p-value < 0.1). In sum, the evidence explains why firms in the *More* group are more likely to choose warnings and firms in the *Less* group are more likely to choose silence in the face of upcoming earnings disappointments.

5. Robustness checks

In this section we examine whether the main result in Table 4 is robust to four scenarios: (1) using the firm as its own control; (2) accommodating changes in the magnitude of a negative earnings surprise; (3) controlling for the stickiness of management forecasts; and (4) controlling for additional variables.

5.1. Using the firm as its own control

One potential concern with our main findings is that litigation firms' information environments may be fundamentally different from those of non-litigation firms. To address this concern, we benchmark litigation firms against themselves. Specifically, we find a firm-quarter in which a lawsuit-triggering event occurs and select the same firm's other quarters in which no lawsuit-triggering event occurs. We pool these observations (N = 3,286) and test whether the verifiability of misstatements in previous disclosures affects warnings. The untabulated results are qualitatively similar to those in Table 4.

5.2. Magnitude of a negative earnings surprise

In our main analysis, we restrict our sample to firms with the absolute value of a negative earnings surprise greater than 0.1% of the share price. This allows us to retain a larger number of lawsuit observations. To investigate whether our results are robust to variations in the magnitude of a negative earnings surprise, we reexamine our hypothesis using firms with an absolute value of a negative earnings surprise greater than 0.5% (N = 15,256). We confirm that our results are robust to using this alternative cutoff. Moreover, we re-run the hypotheses tests using a sample of firms with net loss and an absolute value of a negative earnings surprise greater than 0.1%

of the share price (N = 10,713). The results are qualitatively identical, indicating that our results are generally robust to this alternative sample.

5.3. Stickiness of management earnings forecasts

It is important to control for firms' general disclosure policies and, in our main model, we include *PreForecast*, an indicator variable that equals one if the firm issues at least one management earnings forecast for the prior four quarters and zero otherwise. However, adding this control variable may not be sufficient to exclude the confounding effect. To further control the forecast stickiness, we drop an observation if it has no management earnings forecast for the past four-year period. The sample size decreases from 41,685 to 23,259, and the results remain unchanged.

5.4. Additional controls

5.4.1. Permanence of earnings surprises

Using a revision in analysts' forecasts of the following year's annual earnings as a measure of earnings surprise permanence, Kasznik and Lev (1995) find that warnings tend to be issued when earnings disappointments are permanent. To control for the permanence of earnings surprises, we include in the regression a revision (*Revision*) in analysts' forecasts for the following quarter's earnings around the current quarter's earnings announcement. *Revision* equals the analysts' forecast of one-quarter-ahead earnings issued immediately after the earnings announcement date minus the analysts' forecast of corresponding earnings issued immediately after the prior earnings announcement date, divided by the stock price at the end of the prior quarter. The untabulated results indicate that *Revision* is significantly negative, which is consistent with prior studies (Kasznik and Lev 1995). In addition, our results are not sensitive to the inclusion of *Revision*.

5.4.2. Expectations management

Prior literature suggests that managers guide analysts' forecasts downward to avoid negative earnings surprises (i.e., expectations management). To discriminate between earnings warnings to manage expectations and those to reduce litigation risk or costs, we include a dummy variable for expectations management in regression model (1). Kim and Park (2012) identify expectations management as a management earnings forecast that guides down consensus analysts' forecasts to below or equal to actual earnings. Following their definition, we include a dummy variable labeled *Expect_Mgt,* which equals one if the firm's actual earnings are above or equal to both the management earnings forecast and the analysts' earnings forecast issued immediately after the earnings warning date, and zero otherwise. The results remain unchanged when we include *Expect_Mgt* as a control variable.

5.4.3. The possibility that alternative channels deliver bad earnings news

Donelson et al. (2012) argue that public warnings revealed in companies' press releases are only one way in which managers deliver bad earnings news to the market. Using the evolution of analyst consensus forecasts in a quarter as a proxy for timeliness of all bad earnings news released via other channels not captured by public warnings, they show that a timelier revelation of bad earnings news reduces litigation risk.[24] We add their timeliness measure (*Timeliness*) to control for the possibility that other channels deliver bad earnings news to the market, and we find that our primary results are robust to this control.

6. Conclusion

SEC Rule 10b-5 requires managers to correct or update their prior disclosures if they discover that those prior disclosures are misleading. We argue that managers strategically issue earnings warnings by considering whether misstatements in their prior disclosures are verifiable with hard evidence or not (i.e., by considering verifiability of misstatements). We have three major findings. First, we find that earnings warnings are positively associated with the verifiability of misstatements in previous forward-looking disclosures. This result supports the view that managers who made misstatements containing *more verifiable* information are likely to perceive that their misstatements are easily verifiable in court, and thus, they tend to issue earnings warnings to reduce litigation costs. Second, we find that the positive relation between earnings warnings and misstatement verifiability is more pronounced with the presence of a general counsel and higher ex-ante litigation risk, but less pronounced with insider selling activities. Last, we find that if prior misstatements contain *more verifiable* information, warnings tend to reduce litigation costs. These results indicate that the effects of firms' warning decisions on litigation costs are more contextual than suggested by the prior literature (e.g., Skinner 1994, 1997; Francis et al. 1994; Field et al. 2005; Donelson et al. 2012; Houston et al. 2019; Huang et al. 2020).

Overall, the empirical results demonstrate that managers strategically issue earnings warnings based on their private information about misstatements embedded in prior disclosures. While potential misstatements in managers' previous disclosures are certainly not the sole determinants of litigation costs that affect managers' warning decisions, this study highlights that investors should consider the contents of previous disclosures to understand managers' incentives for issuing earnings warnings.

---

[24] Assuming that analysts' consensus forecasts are the best proxy for market expectation, Donelson et al. (2012) measure timeliness of all earnings news by calculating the proportion of total earnings news revealed up to each day in the quarter and then by computing the average of the proportions across all days in the quarter. We note that earnings news in our sample are all bad news by construction.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix A. Variable definitions

Variables	Definitions
Warn	An indicator variable that equals one if the firm issues an earnings warning and zero otherwise. A management earnings forecast is classified as a warning if the most recent management earnings forecast issued between the analyst forecast date and three days before the earnings announcement date is below the analyst consensus median forecast and zero otherwise;
More	An indicator variable that equals one if the lawsuit case involves explicitly untrue statements or accounting number-related problems and zero otherwise;
Less	An indicator variable that equals one if a lawsuit case involves neither explicitly untrue statements nor accounting number-related problems and zero otherwise;
Size	Log transformation of market value of the firm at the beginning of the quarter;
MTB	The ratio of market value of equity relative to book value of equity at the beginning of the quarter;
|ΔEPS|	Absolute value of current EPS change;
RetVol	Standard deviation of daily stock returns over the one-year period prior to the beginning of the quarter;
CAR (-60,+1)	Cumulative market adjusted stock returns over the 62-day window that ends on the day after the earnings announcement for the quarter;
ForecastError	The difference between the actual earnings for quarter t and the earliest median analyst forecast for quarter t within the 30-day interval from the date of the earnings announcement for quarter t-1, scaled by the share price at the end of quarter t-1;
Analysts	Total number of analysts following the firm for the current quarter;
LitRisk	The ex-ante probability of earnings disclosure-related litigation, estimated using the model in Kim and Skinner (2012);
PreForecast	An indicator variable that equals one if the firm issues at least one management earnings forecast for prior four quarters and zero otherwise;
NoForecast	An indicator variable that equals one if the firm did not issue any management earnings forecast and zero otherwise;
OptimisticForecast	An indicator variable that equals one if the firm issued at least one previous optimistic forecast and zero otherwise.

Appendix B. Examples of cases involving *more* or *less verifiable* evidence of misstatements

Verifiability of misstatements	Litigated company name	Filing date	Allegations from class action complaints	Misstatement
More	CapRock Communications	7/26/ 2000	"Defendants blame the EPS/revenue disaster on a canceled contract. In fact, this contract was never signed…"	Untrue statement
	Power Solutions International	8/22/ 2016	"the Company inappropriately recognized revenue for certain transactions …"	Improper revenue recognitions
	PPG Industries	5/20/ 2018	"The Company received a report concerning potential violations of its accounting policies and identifying certain expenses that should have been accrued in the first quarter…"	GAAPviolations
	Armstrong Flooring	11/15/ 2019	"Company had engaged in channel stuffing to artificially boost sales…"	Channel stuffing
Less	Exodus Communications	7/12/ 2001	"Contrary to the defendants' representations concerning the Company's strong business and financial position, the defendants were aware that the Company was facing a sharp decrease in the rate of new customer installations…"	Failure to disclose
	Aruba Networks	5/23/ 2013	"…Aruba recognized that Cisco was a significant competitor but repeatedly represented to securities analysts and investment managers that Cisco did not constitute a threat to Aruba's core business because Aruba's products were "ahead of the curve" compared to Cisco's…"	Failure to disclose
	GoPro	1/9/ 2018	"…the market prospects for Karma were untenable due to margin challenges in an extremely competitive aerial market and a hostile regulatory environment in Europe and the United States…"	Failure to disclose
	Astec Industries	2/1/ 2019	"…that its wood pellet plants suffered from significant and costly problems that prevented them from running at their promised production capacity, posing a threat to the Company's pellet plant business…"	Failure to disclose

Appendix C. Estimation of ex-ante litigation risk

In this paper we argue that managers assess litigation risk based on their private information about misstatements embedded in prior disclosures and decide whether or not to issue warnings. However, managers can also assess litigation risk based on publicly

Table C1
Litigation risk estimation model.

| Variables | Pred.Sign | Dep.Var = *Sued* | |
		Coeff.	z-stat
Intercept	?	−3.051	−22.11***
RiskInd	+	0.079	1.20
LogAssets	+	0.115	6.84***
MTB	+	0.002	2.92***
ROA	−	−0.460	−1.72*
SalesGrowth	+	0.429	1.12
PPE	−	−0.640	−4.55***
ShareTurnover	+	0.000	0.29
CAR (-60,+1)	+	−0.040	−0.33
RetSkew	−	−0.023	−1.37
RetVol	+	5.519	4.81***
N		41,685	
Pseudo$_R^2$		0.038	

This table reports the litigation risk estimation model following Kim and Skinner (2012). *Sued* is an indicator variable that equals one if the firm is sued in quarter t and zero otherwise. Independent variables include a dummy variable for high litigation industries (*RiskInd*), the natural log of the total assets at the end of quarter t-5 (*LogAssets*), the market to book ratio at the end of quarter t-5 (*MTB*), return on asset at the end of quarter t-5 (*ROA*), one-year sales change scaled by the total assets at the end of quarter t-5 (*SalesGrowth*), property, plant and equipment scaled by the total assets at the end of quarter t-5 (*PPE*), average daily turnover (volume/shares outstanding) over the one-year period prior to quarter t-5 (*ShareTurnover*), cumulative market adjusted stock returns over the 62-day window that ends on the day after the earnings announcement for quarter t-5 (*CAR (-60,+1)*), skewness of daily stock returns over the twelve-month period that ends on the last day of quarter t-5 (*RetSkew*), and standard deviation of daily stock returns over the twelve-month period that ends on the last day of quarter t-5 (*RetVol*). ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively (two-tailed tests).

available information and this risk assessment may confound our results. To control for this confounding effect, we include in equation (1) ex-ante litigation risk (*LitRisk*) estimated using publicly available information. Specifically, we follow Kim and Skinner (2012) and estimate the ex-ante probability of earnings disclosure-related litigation using the following regression.

$$P(Sued = 1) = F(\gamma_0 + \gamma_1 RiskInd + \gamma_2 LogAssets + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 SalesGrowth + \gamma_6 PPE + \gamma_7 ShareTurnover + \gamma_8 CAR(-60, +1)$$
$$+ \gamma_9 RetSkew + \gamma_{10} RetVol + \varepsilon),$$

(C1)

Sued is an indicator variable that equals one if the firm is sued in quarter t and zero otherwise. Independent variables include a dummy variable for high litigation industries (*RiskInd*), the natural log of the total assets at the end of quarter t-5 (*LogAssets*), the market to book ratio at the end of quarter t-5 (*MTB*), return on asset at the end of quarter t-5 (*ROA*), one-year sales change scaled by the total assets at the end of quarter t-5 (*SalesGrowth*), property, plant and equipment scaled by the total assets at the end of quarter t-5 (*PPE*), average daily turnover (volume/shares outstanding) over the one-year period prior to quarter t-5 (*ShareTurnover*), cumulative market adjusted stock returns over the 62-day window that ends on the day after the earnings announcement for quarter t-5 (*CAR (-60,+1)*), skewness of daily stock returns over the twelve-month period that ends on the last day of quarter t-5 (*RetSkew*, and standard deviation of daily stock returns over the twelve-month period that ends on the last day of quarter t-5 (*RetVol*).[25]

Table C1 reports the estimation results of the litigation risk model. The signs of all the independent variables are consistent with those documented by Kim and Skinner (2012) and all of the coefficients except for *SalesGrowth* and *ShareTurnover* are significant. Thus, our estimation results closely replicate those of Kim and Skinner's litigation risk model.

References

Abernathy, J.L., Kubick, T.R., Masli, A.N., 2019. The effect of general counsel prominence on the pricing of audit services. J. Account. Publ. Pol. 38 (1), 1–14.
Basu, R., Naughton, J.P., Wang, C., 2022. The regulatory role of credit ratings and voluntary disclosure. Account Rev. 97 (2), 25–50.
Billings, B.K., Buslepp, W.L., 2016. Strategic management guidance and insider trading activities. J. Account. Publ. Pol. 35 (1), 84–104.
Billings, M.B., Cedergren, M.C., 2015. Strategic silence, insider selling and litigation risk. J. Acc. Econ. 59 (2–3), 119–142.
Billings, M.B., Cedergren, M.C., Dube, S., 2021. Does litigation change managers' beliefs about the value of voluntarily disclosing bad news? Rev. Acc. Stud. 26 (4), 1456–1491.
Black, J., Ham, C.G., Kimbrough, M.D., Yee, H.Y., 2022. Legal expertise and the role of litigation risk in firms' conservatism choices. Account. Rev. 97 (4), 105–129.

---

[25] *RiskInd* equals one if the firm belongs to the biotechnology (SIC code in 2833–2836 or 8731–8734), computer hardware (3570–3577), electronics (3600–3674), retailing (5200–5967), or computer software (7371–7379) industries, and zero otherwise (Francis et al. 1994; Cao and Narayanamoorthy 2011).

Cao, Z., Narayanamoorthy, G.S., 2011. The effect of litigation risk on management earnings forecasts. Contemp. Acc. Res. 28 (1), 125–173.

Cazier, R.A., Merkley, K.J., Treu, J.S., 2020. When are firms sued for qualitative disclosures? Implications of the safe harbor for forward-looking statements. Account. Rev. 95 (1), 31–55.

Chalmers, K., Naiker, V., Navissi, F., 2012. Earnings quality and Rule 10b–5 securities class action lawsuits. J. Account. Publ. Pol. 31 (1), 22–43.

Choi, S.J., 2007. Do the merits matter less after the Private Securities Litigation Reform Act? J. Law. Econ. Org. 23 (3), 598–626.

Cutler, J., Davis, A.K., Peterson, K., 2019. Disclosure and the outcome of securities litigation. Rev. Acc. Stud. 24 (1), 230–263.

Donelson, D.C., Hopkins, J.J., 2016. Large market declines and securities litigation: Implications for disclosing adverse earnings news. Manage. Sci. 62 (11), 3183–3198.

Donelson, D.C., McInnis, J.M., Mergenthaler, R.D., Yu, Y., 2012. The timeliness of bad earnings news and litigation risk. Account. Rev. 87 (6), 1967–1991.

Donelson, D.C., Hopkins, J.J., Yust, C.G., 2015. The role of directors' and officers' insurance in securities fraud class action settlements. J. Law. Econ. 58 (4), 747–778.

Field, L., Lowry, M., Shu, S., 2005. Does disclosure deter or trigger litigation? J. Acc. Econ. 39 (3), 487–507.

Francis, J., Philbrick, D., Schipper, K., 1994. Shareholder litigation and corporate disclosures. J. Acc. Res. 32 (2), 137–164.

Graham, J.R., Harvey, C.R., Rajgopal, S., 2005. The economic implications of corporate financial reporting. J. Acc. Econ. 40 (1–3), 3–73.

Grundfest, J.A., Perino, M.A., 1997. Ten things we know and ten things we don't know about the Private Securities Litigation Reform Act of 1995. Joint written testimony before the Subcommittee on Securities of the Committee on Banking, Housing, and Urban Affairs, United States Senate, on July 24:1997. Government Printing Office, Washington D.C..

Ham, C.G., Kaplan, Z.R., Utke, S., 2023. Attention to dividends, inattention to earnings? Rev. Acc. Stud. 28 (1), 265–306.

Heflin, F., Kross, W., Suk, I., 2012. The effect of Regulation FD on the properties of management earnings forecasts. J. Account. Publ. Pol. 31 (2), 161–184.

Heitzman, S., Wasley, C., Zimmerman, J., 2010. The joint effects of materiality thresholds and voluntary disclosure incentives on firms' disclosure decisions. J. Acc. Econ. 49 (1–2), 109–132.

Hopkins, J.J., Maydew, E.L., Venkatachalam, M., 2015. Corporate general counsel and financial reporting quality. Manage. Sci. 61 (1), 129–145.

Houston, J.F., Lin, C., Liu, S., Wei, L., 2019. Litigation risk and voluntary disclosure: Evidence from legal changes. Account. Rev. 94 (5), 247–272.

Huang, Y., Li, N., Yu, Y., Zhou, X., 2020. The effect of managerial litigation risk on earnings warnings: evidence from a natural experiment. J. Acc. Res. 58 (5), 1161–1202.

Johnson, M.F., Kasznik, R., Nelson, K.K., 2001. The impact of securities litigation reform on the disclosure of forward-looking information by high technology firms. J. Acc. Res. 39 (2), 297–327.

Johnson, M.F., Nelson, K.K., Pritchard, A.C., 2007. Do the merits matter more? The impact of the Private Securities Litigation Reform Act. J. Law. Econ. Org. 23 (3), 627–652.

Kasznik, R., Lev, B., 1995. To warn or not to warn: Management disclosures in the face of an earnings surprise. Account. Rev. 70 (1), 113–134.

Kim, Y., Park, M., 2012. Are all management earnings forecasts created equal? Expectations management versus communication. Rev. Acc. Stud. 17 (4), 807–847.

Kim, I., Skinner, D.J., 2012. Measuring securities litigation risk. J. Acc. Econ. 53 (1–2), 290–310.

Kwak, B., Ro, B.T., Suk, I., 2012. The composition of top management with general counsel and voluntary information disclosure. J. Acc. Econ. 54 (1), 19–41.

Lee, S., Matsunaga, S.R., Park, C.W., 2012. Management forecast accuracy and CEO turnover. Account. Rev. 87 (6), 2095–2122.

Li, R.Z., 2018. Combining bad news with good news: A tactic to deter shareholder lawsuit. Working paper. University of Mannheim.

Li, E.X., Wasley, C.E., Zimmerman, J.L., 2016. The disclose or abstain incentive to issue management guidance. J. Law. Finan. Acc 1 (1), 187–233.

Lu, Y., Skinner, D.J., 2020. Moving forward: Management guidance and earnings announcement returns. Working paper. University of Chicago.

Maslar, D.A., Serfling, M., Shaikh, S., 2021. Economic downturns and the informativeness of management earnings forecasts. J. Acc. Res. 59 (4), 1481–1520.

McMullin, J., Schonberger, B., 2022. When good balance goes bad: A discussion of common pitfalls when using entropy balancing. J. Finan. Repor. 7 (1), 167–196.

Nelson, K., Pritchard, A., 2007. Litigation risk and voluntary disclosure: The use of meaningful cautionary language. Working paper. University of Michigan.

Pritchard, A.C., Sale, H.A., 2005. What counts as fraud? An empirical study of motions to dismiss under the private securities litigation reform act. J. Emp. Leg. Stud. 2 (1), 125–149.

Rogers, J.L., Stocken, P.C., 2005. Credibility of management forecasts. Account. Rev. 80 (4), 1233–1260.

Rogers, J.L., Van Buskirk, A., 2009. Shareholder litigation and changes in disclosure behavior. J. Acc. Econ. 47 (1–2), 136–156.

Rogers, J.L., Van Buskirk, A., Zechman, S.L.C., 2011. Disclosure tone and shareholder litigation. The Account. Rev. 86 (6), 2155–2183.

Rosenblum, R.H., 1991. An issuer's duty under rule 10b–5 to correct and update materially misleading statements. Catholic University Law Rev. 40, 289–330.

Shroff, N., Verdi, R.S., Yost, B.P., 2017. When does the peer information environment matter? J. Acc. Econ. 64 (2–3), 183–214.

Skinner, D.J., 1994. Why firms voluntarily disclose bad news. J. Acc. Res. 32 (1), 38–60.

Skinner, D.J., 1997. Earnings disclosures and stockholder lawsuits. J. Acc. Econ. 23 (3), 249–282.

Tucker, J.W., 2007. Is openness penalized? Stock returns around earnings warnings. Account. Rev. 82 (4), 1055–1087.