Journal of Banking and Finance 163 (2024) 107180



Contents lists available at ScienceDirect

Journal of Banking and Finance

journal homepage: www.elsevier.com/locate/jbf





Of fogs and bogs: Does litigation risk make financial reports less readable?☆

Mark Humphery-Jenner [a], Yun Liu [b], Vikram Nanda [c], Sabatino Silveri [d], Minxing Sun [e,*]

[a] UNSW Business School, Australia
[b] Keck Graduate Institute, CA, USA
[c] University of Texas at Dallas, TX, USA
[d] West Virginia University, WV, USA
[e] University of North Georgia, GA, USA

ARTICLE INFO

JEL Classification:
G30
G38
K22

Keywords:
Readability
Transparency
Securities class actions
Litigation risk
Disclosure

ABSTRACT

We predict that firms' attempts to reduce litigation risk can inadvertently worsen financial report readability by increasing reports' size, complexity, and altering their linguistic characteristics. We find that litigation risk reduces report readability. Readability worsens after firms experience a securities class action. This persists for several years after lawsuit resolution. To alleviate endogeneity concerns, we show that the litigation experience of a firm's managers and directors at *other* firms impacts readability. We also find that firms adjust readability around litigation flashpoints. Using an SEC rule change as an exogenous shock, we show that adjustments to readability can moderate firm litigation risk.

1. Introduction

Companies' financial reports are often deemed to be opaque and difficult to digest, deepening information frictions and impairing stock liquidity. Extant literature finds that poor readability is associated with worse access to credit (Bonsall et al., 2017), greater analyst forecast dispersion (Lehavy et al., 2011) and greater stock volatility (Loughran and McDonald, 2014). Regulators have also expressed frustration with opaque or excessively complex disclosures, leading the Securities and Exchange Commission (SEC) to pass the Plain English Rule in 1998. The benefits of the rule were short-lived and firms' financial reports have, if anything, become less readable since then (Li, 2008; Loughran and McDonald, 2014). This begs the question of what might drive firms to produce reports of poor readability.

We contend that litigation risk could be a salient factor in driving firms toward worse readability in their financial reports. We argue that worse readability is an inadvertent consequence of firms attempting to disclose more information and to hedge their language.[1] Indeed, this adds texture to the finding in Donelson et al. (2022) that litigation risk is associated with more frequent voluntary disclosures. These frequent disclosures are one way to ensure more timely and accurate information. Our focus is on how firms *write* their disclosures and whether this quest for 'more' disclosure and less litigation-prone disclosure has other ramifications.

We focus on Securities Class Actions (SCAs). SCAs involve shareholders suing for disclosure failures, including financial misstatements

☆ We are grateful to seminar participants at the Midwest Finance Association Annual Meeting, Financial Management Association Annual Meeting, Australasian Banking and Finance Conference, New Zealand Finance Colloquium, Academy of Business Research San Antonio Conference, Deakin University, Queensland University of Technology, University of Auckland, University of Memphis and University of Queensland. We also thank Jing-Chi (George) Chen for research assistance and Henk Berkman for helpful comments. The authors are alphabetically ordered. All authors are with equal contribution.

* Corresponding author.
E-mail address: minxing.sun@ung.edu (M. Sun).

[1] This often involves additional qualifiers and verbosity. Note that the additional text need not relate to litigation. As an example of using more accurate but less readable language, Broadcom Corporation's pre-litigation language uses the sentence: *"In addition, our gross margin may be affected by the future introduction of certain lower margin products"* (10-K filing date 4/2/2001, Fog=11.51; Bog=111). Post-litigation, this sentence was modified to a more cautious and less readable: *"In addition, gross profit is likely to be impacted in the future by competitive pricing strategies, fluctuations in the volume of our product sales, fluctuations in silicon wafer costs, and the possible future introduction of certain lower margin products"* (10-K filing date 3/19/2002, Fog=23.81; Bog=157). See the Internet Appendix for additional examples.

https://doi.org/10.1016/j.jbankfin.2024.107180
Received 5 November 2022; Accepted 4 April 2024
Available online 16 April 2024
0378-4266/© 2024 Elsevier B.V. All rights reserved.

or material omissions. They contrast with other types of litigation, such as derivative lawsuits, which are not per se related to disclosure and cover a broader range of malfeasance. SCAs often have negative outcomes for firms and their CEOs. SCAs, and the related SEC enforcement actions are known to harm CEOs' reputations and their career prospects and compensation (Karpoff et al., 2008; Humphery-Jenner, 2012). SCAs also damage a corporation's standing with customers and suppliers (Karpoff and Lott, 1993) and potentially worsen access to finance (Autore et al., 2014; Yuan and Zhang, 2015, 2016).

We investigate whether litigation experience – or litigation risk – might drive firms to alter the nature of mandatory disclosures. Our prediction is that firms that are sufficiently concerned about litigation will seek to improve disclosure thoroughness to reduce the risk of lawsuits, though the downside is that financial reports may become less readable. That is, increasing the *amount* of text in a report can make it more difficult and time-consuming for readers to determine and process relevant information. Thus, increased length, can reduce report readability as shown, for instance, in Loughran and McDonald (2014).[2] Indeed, there is some evidence that firms increase the disclosure of risk factors when there is greater litigation risk (Nelson and Pritchard, 2016). Hence, firms face a trade-off between issuing complex and thorough reports that mitigate firm litigation exposure by, for example, giving firms greater scope to claim that the report is not misleading – but that may, ironically, also impair the quality of information possessed by investors.

Attempts to improve disclosure accuracy can worsen readability for a variety of reasons. A report can be less readable because it uses complex words. Using words that convey sophisticated and subtle messages can be more accurate than simple declaratory statements, even if the latter would notionally make the report more readable. Indeed, complex words often have a range of meanings and interpretations. Such vagueness gives the firm more scope to argue that the report is capable of myriad interpretations; and thus, the disclosure was not false. Similarly, complex sentence structures provide caveats and qualifiers to fine-tune statements, which could be technically more accurate but also more convoluted. The use of litigious words and related jargon can also add to the complexity of a report. This makes the reports more difficult to understand for retail investors, or for analysts who face significant time pressure. However, it does enable firms to address specific legal causes of action; and thus, to pre-empt litigation by specifically and proactively countering it. Further, readability declines when firms attempt to ward off litigation by providing exhaustive detail. While the report becomes more thorough, it can also inundate a reader with excessive information.

We explore the relation between readability and litigation risk by using a sample of US firms from 1993 to 2019. The literature has developed different measures of financial report readability. We focus on 10-K reports to ensure comparability across firms.[3] We assess readability using measures for both complexity and thoroughness. The complexity measures include the Fog index, which is a function of sentence length and the proportion of multi-syllabic words (Gunning, 1952), the PC index, which is the first principal component derived from six variations of the Fog index (Guay et al., 2016), and the Bog index, which captures a broader set of plain English attributes beyond syllable counts, including those recommended by the SEC (Bonsall et al., 2017). We also use file size (Loughran and McDonald, 2014) and word count to reflect the thoroughness of reports. All five measures are negatively associated with reading ease, that is, larger values of these measures indicate less readability.

We first test how financial report readability is affected when firms are subject to a lawsuit or face high litigation risk. We predict that firms that experience a lawsuit will significantly alter their disclosure policies to reduce the likelihood of subsequent lawsuits. We expect firms to enhance disclosure accuracy and err on the side of "too much" rather than "too little" information, even at the expense of readability. Consistent with this prediction, we find that firms produce less readable 10-Ks after facing an SCA. This impact is not transitory and lasts several years after the SCA is eventually dismissed or settled.

We next dig deeper into how litigation impacts firms' linguistic choices. Here, we look at two specific components of the complexity indexes: words per sentence and complex word ratio, as well as two types of words: litigious words and uncertain words. We find evidence that each of these components and types of words increase in response to litigation. That is, we find that the number of words per sentence and the use of complex words increases in response to litigation or when the risk of litigation is relatively high. This is consistent with firms qualifying and hedging their statements. Moreover, depending on the regression setting, we also find that the use of litigious words and uncertain words increases. The increase in litigious words suggests that firms may pre-empt litigation by proactively addressing potential causes of action in their financial reports. The increase in uncertain words suggests a movement away from declaratory statements and a tendency toward conveying nuanced and intricate information that, while not inaccurate, may be more ambiguous.

We take steps to address potential econometric issues and endogeneity concerns. The finding that litigation experienced several years earlier continues to influence readability indicates that it is not a short-lived mechanical effect due to firms' reporting on current litigation. Our results are robust when using a propensity score matching procedure, suggesting that the differences in readability are not driven by the underlying economics or the fundamental nature of the firms' operations. The results are also robust to focusing on the subset of firms that use relatively few 'litigious' words in their financial reports. Thus, the results hold when focusing on the set of firms that are especially unlikely to merely report on litigation.

We also specifically address identification concerns. We do this in several ways. We investigate how SCA exposure of a firm's managers and directors at *other* firms that they are affiliated with, impacts readability.[4] We predict that if managers or directors of a firm experience litigation at another firm, this will reduce readability at the focal firm, even when the focal firm is not the subject of litigation. In effect, this creates a series of manager/director-specific quasi-exogenous shocks that amplify their perception of litigation risk. That is, we argue that outside litigation experience can make managers and directors more cognizant of the risks and consequences of litigation and induce them to reduce litigation risk by producing more voluminous but less readable financial reports at the focal firm. We consider both current litigation at another firm that a manager or director is affiliated with as well as past litigation experience at another firm that the CEO has worked for. We find that firms that are not currently subject to litigation but are connected to litigated firms through management or directors produce less readable 10-Ks. In a separate test, we explore how a CEO's prior SCA experience affects reporting behavior. We find that CEOs with prior SCA experience at a *different* firm produce less readable 10-Ks. These results help to reduce endogeneity concerns as the litigation is occurring

[2] The rationale is similar to the notion of signal-to-noise ratio that is sometimes used informally to refer to the ratio of useful information to false or irrelevant data in a conversation or exchange (see, for instance, https://www.sciencedirect.com/topics/computer-science/noise-to-signal-ratio).

[3] The results are robust to looking at 10-Q reports as well. We focus on documents that all firms must produce. Otherwise, readability metrics will likely differ by virtue of the types of documents firms must disclose.

[4] There are two dimensions to this, one in the cross-section and one in the time-series. We look at interlocking directors and outside directors of the focal firm that are concurrently employed in a senior position at another firm and vice versa (e.g., a CEO or CFO of the focal firm who sits on another firm's board). We also look at the past SCA experience of the CEO of the focal firm, i.e., whether the CEO previously worked as a director, executive, or senior manager at another firm that was subject to an SCA while she was there.

outside the focal firm but still impacts the focal firm's report readability.

We further analyze changes to class actions in the Ninth Circuit Court of Appeals (9th Circuit). This involves a court case (In re Silicon Graphics, Inc.) that made it more difficult to sue firms in federal judicial districts overseen by the 9th Circuit (Crane and Koch, 2018).[5] We find that firms in the 9th Circuit experience significant improvements in readability after the relevant ruling, consistent with the possibility that a reduction in litigation risk (conversely increase in litigation risk) is associated with better (conversely worse) readability.

To test our underlying premise that firms face a trade-off between litigation risk and readability, we further examine how financial report readability affects subsequent litigation risk. We rely on the 1998 Plain English Rule for identification.[6] In October 1998, the SEC implemented the Plain English Rule requiring firms to use plain English in their prospectus filings. Even though the rule targeted prospectus filings, the SEC encouraged the use of plain English in all filings, including 10-Ks. This appears to have been effective as Loughran and McDonald (2014) find that 10-Ks also became more readable in response to the rule. We thus use the 1998 Plain English Rule as an instrumental variable for each of our readability measures and apply two-stage least square regressions to test whether readability has implications for litigation risk. We restrict our sample to the 1996–2000 period (we exclude 1998, the year the rule is introduced). In the first stage we find that, consistent with Loughran and McDonald (2014), 10-K readability improves after implementation of the 1998 Plain English Rule. In the second stage we find a negative relation between each of our instrumented readability measures and litigation risk. This suggests that disclosure policies that make reports more readable may have the downside of making firms more vulnerable to SCA lawsuits.

Our study contributes to the literature in several ways. Some studies have analyzed firms' strategic reporting decisions (see Beyer et al., 2010 for a review). However, there is limited research on strategic reporting using disclosure readability and linguistic features. Prior studies on disclosure readability find that firms reduce readability in response to lower and less persistent earnings (Li, 2008) and higher short selling pressure (Li and Zhang, 2015). Firms also worsen readability if they engage in greater earnings management (Lo et al., 2017). We highlight that worse readability can be a result of firms attempting to reduce litigation risk by providing accurate but complex and exhaustive disclosures, leading to a trade-off between litigation risk and readability.[7] We also show that firms improve readability in response to an increase in information asymmetry brought about by an exogenous reduction in analyst coverage, consistent with firms trading off the costs and benefits of readability. Therefore, we show that firms' reporting practices are influenced by the decision-makers' subjective assessment of the environment, which is in turn shaped by their individual experiences.

In addition, there has been little prior consensus on how managers change their financial disclosure behavior in response to high litigation risk, with much of the focus on voluntary disclosures. Studies such as Lev (1992), Kasznik and Lev (1995), Skinner (1997) and Field et al. (2005) find that firms tend to provide high quality and more frequent voluntary financial disclosures to reduce litigation risk. Francis et al. (1994) suggest that firms might increase voluntary disclosures to reduce litigation risk, but this might not be an effective tactic. Nelson and Pritchard (2016) suggest that litigation risk encourages firms to disclose more risk factors. There can also be spillover effects from litigation to other firms in the same industry. Donelson et al. (2022) find that firms with a higher litigation risk produce longer and less readable financial reports. Similarly, being a peer firm to a sued firm is associated with worse readability, consistent with litigations often targeting firms with similar characteristics. However, interestingly, in the two years following some SCAs, industry peer firms in the top tercile of litigation risk experience negative abnormal returns and respond with more voluntary earnings and sales forecasts and more readable mandatory disclosures relative to industry peers in the bottom tercile of litigation risk.[8] Their findings are concentrated in SCAs that are meritorious (i.e., eventually settled) and they do not find any significant change in industry peer readability for SCAs that are eventually dismissed. In contrast, we focus on the mandatory disclosures of firms that are the subject of an SCA or, ex ante, more likely to be the subject of an SCA. We investigate a broader class of SCAs and find that SCAs are associated with a decrease in mandatory disclosure readability for such firms. Our findings are consistent with a strand of literature that finds firms react cautiously to SCAs. For example, Frost and Pownall (1994) and Baginski et al. (2002) find that firms reduce the frequency of voluntary disclosure when facing high *ex ante* litigation risk, suggesting that firms might take a "small target" approach to how often they disclose information. Moreover, Rogers and Van Buskirk (2009) find that firms decrease the level of voluntary disclosures post litigation, but they do not look at mandatory disclosures or the quality or nature of disclosures. Our results thus contribute to this strand of literature by showing that managers trade-off readability with litigation risk. They do this via making their mandatory disclosures longer and more complex, potentially involving the use of legalese. This has the downside effect of worsening disclosure readability.

2. Literature review and related background

2.1. Annual report readability

There is a growing body of literature suggesting that 10-K readability is beneficial for firms. For example, Biddle et al. (2009) find that firms with less readable financial statements make less efficient investments while Lehavy et al. (2011) find that greater analyst effort is required when financial statements are less readable (as evidenced by analyst earnings forecasts that have greater dispersion, lower accuracy and greater overall uncertainty). Similarly, Loughran and McDonald (2014) find that worse readability is associated with higher stock return volatility, greater analysts forecast error, greater analyst dispersion, and larger absolute earnings surprises.

In addition, Bonsall and Miller (2017) find that less readable financial disclosures are associated with less favorable ratings, greater bond rating agency disagreement, and a higher cost of debt. Hwang and Kim (2017) find that firms with less readable disclosures trade at significant discounts relative to fundamental value. In contrast, more readable documents tend to attract investors. For example, Miller (2010) finds that more readable filings are associated with more trading and less disagreement among small investors. You and Zhang (2009) find stronger investor underreaction with more complex 10-K reports while Rennekamp (2012) finds that more readable disclosures are associated with stronger reactions and at times, even overreaction. In addition, Lawrence (2013) finds that investment level and the returns of individual investors are increasing with clearer and more concise

[5] We concede that the 9th Circuit jurisdiction is largely the west coast, with most listed firms being from California and that the 9th Circuit ruling does not preclude firms from forum shopping. Moreover, the decision occurred in 1999, around the time of the tech boom and tech wreck which disproportionately impacted firms in California. However, the natural experiment has been used in other literature (Ganguly et al, 2021; Fu, Wang, Zhang, and Liu, 2022), and may make it more difficult to sue or to win in litigation.

[6] Note that this differs from when we look at how litigation influences readability. In those tests we ensure identification through (inter alia) looking at how experience of litigation at *other* firms influences readability at the focal firm: this creates a series of director-specific exogenous shocks.

[7] As Choi, Nelson, and Pritchard (2009) note, the Private Securities Litigation Reform Act of 1995 provides firms a safe harbor for forward-looking statements if firms provide meaningful cautionary language.

[8] In creating their sample, Donelson, Flam, and Yust (2022) exclude SCAs for firms that are not in the highest tercile of litigation risk and exclude SCAs that are accompanied by a restatement, SEC common letter, or SEC investigation.

disclosures. Against this backdrop, we investigate why firms might continue to produce less readable reports.

2.2. Litigation risk

Securities class action lawsuits arise if the firm, or its officers, intentionally make false or misleading disclosures to alter share prices and shareholders suffer losses because they purchase shares at the inflated price. SCAs often follow managers issuing erroneously optimistic statements (Roger et al., 2011). Prior studies find that SCAs and the related SEC enforcement actions harm CEO reputation and compensation (Karpoff et al., 2008; Humphery-Jenner, 2012). Moreover, SCAs also worsen a corporation's stance with its customers and suppliers (Karpoff and Lott, 1993) and potentially worsen access to finance (Autore et al., 2014; Yuan and Zhang, 2015, 2016). Thus, firms have an incentive to reduce litigation risk.

Our contention is that managers are likely to modify their disclosure behavior when firms are faced with high litigation risk. Ideally, managers could minimize litigation risk by providing accurate reports and more frequent disclosures (Field et al., 2005). Indeed, Donelson et al. (2022) highlight that litigation risk is associated with more frequent voluntary disclosures. However, fear persists that firms might be subject to vexatious lawsuits that arise merely because the share price declined, where investors attempt to search for any material information the firm might have overlooked in prior disclosures. Given that lawsuits per se can induce reputational damage, firms might seek to reduce litigation risk by providing lengthy and complex, though ultimately thorough and accurate disclosures. That is, both the frequency and nature of disclosures can be important.

2.3. The impact of litigation risk on readability

One way that firms can reduce litigation risk is by disclosing more information and hedging and caveating the information that they disclose. For example, Nelson and Pritchard (2016) indicate that increased litigation risk is associated with firms disclosing more risk factors. This can manifest in several ways that reduce readability. Managers could increase the volume of material that they disclose. Here, they would strive to make disclosures more exhaustive and thorough, even if they are more difficult and time-consuming to process. This would manifest in an increased word count, for example. Further, managers might increase the complexity of their disclosures. Thus, rather than using declaratory statements, they might try to use more accurate – but also more ambiguous – complex words. This would help stave off allegations of inaccurate disclosure. Managers might also directly attempt to address potential causes of action. This can result in reports containing more litigious terms, which can directly grapple with, and preempt, potential legal considerations. If the firm fears SCAs, it could use such legal language preemptively. Finally, firms might try to hedge their statements more. Here, instead of straightforward statements, firms can qualify statements. In addition to the use of complex words, this would also manifest in increased sentence length. Thus, we predict that firms facing higher litigation risk produce less readable reports.

We also anticipate that litigation experience at other firms will influence managerial actions at their present firm. This experience could come from working at a different firm that was sued. It could also come from having an interlocking directorship with a firm that is sued. Prior literature highlights that managers learn from experience in myriad corporate contexts, such as takeovers (Aktas et al., 2013) and divestitures (Humphery-Jenner 2019). Notably, this differs from the analysis in Donelson et al. (2022), who analyze how witnessing litigation at a 'peer' firm in the same industry might influence disclosure attributes. However, merely witnessing another firm being sued likely has different behavioral implications from experiencing a litigation firsthand, analogous to what Bernile et al. (2017) find with exposure to early life disasters.[9] Further, directors can gain valuable knowledge and experience from their roles as directors at other firms and this knowledge spreads throughout directors' networks (Shropshire, 2010). Therefore, we expect that litigation experience, either at a prior firm or at an interlocked firm, will also shape firms' disclosure practices.

3. Data

3.1. Sample selection

Our main sample consists of around 75,000 firm-year observations. We start with the set of CRSP/Compustat firms and ExecuComp data from 1992 onwards. We then collect SEC 10-K readability data from the WRDS SEC Readability and Sentiment database. Following Loughran and McDonald (2014), we include 10-K filings, 10-K405, 10-KSB and 10-KSB40 filings. We require that firms have a Compustat permanent ID match and have a gap of at least 180 days between two filings.

We collect data on firms' annual accounting information, number of business segments, number of geographic segments and bond ratings from Compustat. We obtain data on stock returns and the number of shares outstanding from CRSP. Institutional holdings information is from Thomson Reuters 13-F filings, obtained via WRDS. CEO compensation information is from ExecuComp while analyst coverage data is from IBES. We collect litigation data from the Stanford Securities Class Action Clearinghouse (SCAC). As the SCAC data begins in 1996, so does our litigation sample. However, in tests that require lagged litigation data, we use data from 1999 onwards (i.e., to incorporate the three years of lags). We use BoardEx to identify manager and board connections among firms and to derive data on current or prior SCA experience. Brokerage house mergers data is acquired from Marcin Kacpercayk's data library.[10] All continuous variables are winsorized at the first and 99th percentiles to mitigate the impact of outliers.

3.2. Readability measures

There are various ways to measure readability. We use several readability measures developed in the literature to ensure that our results do not merely reflect the specifics of any individual measure. We use 10-K file size and the number of words in the financial report to capture report thoroughness as a readability measure.[11] We use the three measures below to capture report complexity as a readability measure. It is important to recognize that there are some differences in how the literature views these measures. For instance, while Loughran and McDonald (2014) suggest that the concept of readability is difficult to disentangle from complexity, Bonsall et al. (2017) argue otherwise and claim that only *Bog* (of the various measures we consider) reliably captures true "readability". Loughran and McDonald (2020), however, point out that a problem with the Bog score is that it is based on proprietary data and software so that researchers do not know exactly how the Bog Index is being created. Second, the Bog Index is a measure of writing style, which is not necessarily the same as readability. Recognizing the limitations of the various measures, we consider a variety of

[9] Bernile et al. (2017) find that early life disasters can have a bifurcated result on individual behavior. Being exposed to a relatively less fatal disaster might inure a manager to risk. However, exposure to a more fatal disaster might trigger risk aversion. In the SCA context, the behavioral implications of experiencing a litigation firsthand could differ significantly from simply witnessing another firm experience litigation.

[10] http://pages.stern.nyu.edu/~sternfin/mkacperc/public_html/~mkacperc.htm.

[11] As Bonsall, Leone, Miller, and Rennekamp (2017) note, the introduction of various file formats (e.g., HTML, XML, PDF) and picture format file attachments can lead to variation in 10-K file size through time that is unrelated to 10-K readability. As a result, we also use word count as another measure of report thoroughness.

readability measures, as noted above. Note that all three measures are negatively correlated with reading ease.

Fog Index: A linear combination of syllables per word and words per sentence. Specifically, it is computed as 0.4*(average number of words in sentences + percentage of words of three or more syllables). The index estimates the number of years of education that readers need to understand the text. Since its development in Gunning (1952), the Fog Index has received significant use in prior studies.[12]

PC Index: The first principal component derived from six similarly defined readability measures: Flesch-Kincaid, LIX, RIX, Fog, ARI and SMOG. These six measures are effectively variations of functions based on the numbers of characters, syllables, words and sentences in a document. We follow the approach in Guay et al. (2016) in constructing this measure.

Bog Index: A multi-faceted measure of disclosure clarity based on plain English writing principles and the SEC guidelines for clear communication with investors. The Bog Index is computed by a computational linguistics software that captures a broader set of plain English attributes such as word familiarity, style problems, and sentence variety.[13] See Bonsall et al. (2017) for a detailed description of its construction.

In addition to the three holistic complexity measures above, we also use more specific measures of readability and writing characteristics to examine various facets of readability. We capture firms' tendency to add nuance and to hedge statements by computing the proportion of words that are deemed complex (contain three or more syllables) and the average words per sentence. We also calculate the proportion of words that are "uncertain" (as defined by Loughran and McDonald, 2011) to capture firms' attempts to avoid declarative statements. Finally, we measure firms' tendency to address specific legal causes of action, potentially preemptively, by calculating the proportion of words that are "litigious" (as defined by Loughran and McDonald, 2011). We note that these last two measures depend on relatively subjective classification of word types.

3.3. Summary statistics

The summary statistics for the full sample are in Panel A of Table 1. The Appendix contains detailed descriptions of the variables we use throughout the paper. The average 10-K file size is around 7 MB and the average word count is around 40,000 words. As both variables display significant skewness, we use the natural log of these variables in regression analysis. The average for the Fog Index is 19.98, indicating that around 20 years of education is needed to understand an average 10-K filing. By construction, the average for the PC Index is zero while the average for the Bog Index is 84.35, consistent with the average reported in Bonsall et al. (2017).

The firms in our sample have 4.78 geographic segments, and 4.64 business segments, on average, suggesting that the average firm in our sample has a moderate degree of business complexity. Over half of our firms are incorporated in Delaware. Following Kim and Skinner (2012), we include sales growth, R&D expenses scaled by sales, adjusted market return, return volatility and skewness as control variables in SCA logit regressions. The litigation dummy mean is 0.018, indicating that a 1.8 % of our firm year observations experience an SCA.

In Panel B we provide details of the *PC* index construction while in Panel C we provide a correlation matrix of the readability measures. The thoroughness measures of *File Size* and *Word Count* have a correlation of 65.3 % while the correlation among the complexity measures range from 29 % to 99 % (the six readability measures that factor into the *PC* index are essentially functions of word and sentence length and thus highly correlated). The correlations between *Bog* and other complexity measures are lower (about 40 %) relative to correlations between the other measures (over 80 %). This suggests that *Bog* picks up a somewhat different readability dimension than *Fog* and *PC*. The correlation between the complexity and thoroughness readability measures ranges from 29 % to 48 %.

4. Empirical results

We begin by analyzing how firms adjust their reporting behavior following SCAs. We also explore how predicted litigation risk influences readability. We then provide cleaner identification of the effect by exploring the impact of litigation experienced at interlocked firms or experienced at other firms through prior employment. These tests help to mitigate endogeneity concerns. We then cross-validate our results by analyzing the relation between readability and factors that are common flash points for litigation. Finally, we provide more insights by analyzing the effects of a shock to readability (the 1998 Plain English Rule) and a shock to the firm's information environment (brokerage house mergers).

4.1. How do SCAs affect report readability?

We first investigate how firms adjust report readability following litigation. Our prediction is that class actions put managers on notice that their firm could be at risk of further litigation. Class action experience will encourage managers to take steps to reduce future litigation risk. We anticipate that one such step is to adjust their disclosure practices. This can include making disclosures more thorough, more nuanced (i.e., complex) and by directly addressing legal matters. All such matters might inadvertently worsen financial report readability.

We estimate OLS regressions in which the dependent variable is the firm's 10-K report readability. We also analyze several metrics related to financial report readability, including the ratio of complex words and litigious words (discussed in Section 4.2). We construct an indicator that equals one if the firm was the target of an SCA in the year to which that 10-K relates. Importantly, the 10-K will have been written after any such SCA filing but pertain to the financial year in which it was filed (i.e., an SCA filed in year *t* is covered in the financial report pertaining to year *t*, but which is ultimately produced after year *t*'s conclusion, so after any SCA filing). We create another indicator variable if the firm was the target of an SCA during the prior three years. We include a standard set of control variables (see for example, Li, 2008). These include firm size, the market-to-book ratio, firm age, asset tangibility ratio, a loss indicator, a special items indicator, monthly return volatility, the number of geographic segments, the number of business segments, institutional ownership, and a Delaware incorporation dummy. We also check robustness to different fixed effects. Panel A of Table 2 uses year and industry fixed effects; Panel B uses year and firm fixed effects. In all cases we cluster standard errors by firm.

The results in Table 2 are broadly consistent with expectations. This is the case whether we use industry or firm fixed effects. We find that after an SCA, firms' readability measures significantly worsen. This lasts several years after the litigation is filed, as indicated by the positive and significant coefficients on both the *Litigation* and the *Lag1to3 Litigation* variables when analyzing the Fog and PC complexity measures as well as the file size and word count thoroughness measures. The Bog score is positively related to the *Litigation* and the *Lag1to3 Litigation* variables, though only the lagged variable is significant. This could suggest that the variables underlying Bog, such as those related to writing style, adjust more gradually than other measures. The statistically significant results

[12] See e.g., Li (2008); Gary, Hilary and Verdi (2009); Lehavy, Li, and Merkley (2011); Dougal, Engelberg, Garcia, and Parsons (2012); Lo, Ramos and Rogo (2017).

[13] Bog is computed as the sum of three components: *Bog Index = (Sentence Bog + Word Bog – Pep).Sentence Bog = (Average Sentence Length)^2/Long Sentence Limit*, where the default long sentence limit is 35 words per sentence. *Word Bog = (Style Problems + Heavy Words + Abbreviations + Specialist)*250/Number of Words*, and *Pep=(Names + Interest Words + Conversational)*250/Number of Words + Sentence Variety*.

Table 1
Summary statistics
This table presents summary statistics for the variables used in our analysis. Panel A contains descriptive statistics, Panel B contains information regarding the construction of the PC index and Panel C contains a correlation matrix for the various readability measures. Variable definitions are in the Appendix.

Panel A: Descriptive Statistics

Readability Measures	N	Mean	Median	Std. Dev
Fog	75,286	19.984	19.932	1.056
Bog	73,508	84.350	84.000	7.471
PC	75,286	0.000	−0.159	2.356
File Size (in bytes)	75,286	7,397,198	2,041,165	11,800,000
Word Count	75,286	41,206	36,070	27,393
Words per Sentence	75,286	24.409	24.113	2.522
Complex Word Ratio	75,286	0.255	0.256	0.013
Litigious Word Ratio	75,286	0.011	0.009	0.005
Uncertain Word Ratio	75,286	0.015	0.015	0.003
Positive	75,286	0.008	0.008	0.002
Firm Characteristics				
Log(MV)	75,286	5.952	5.912	2.164
Loss	75,286	0.315	0.000	0.464
M/B	75,286	1.925	1.331	1.763
Firm Age	75,286	17.941	13.000	15.962
Special Item/Total Assets	75,286	−0.016	0.000	0.066
Monthly Ret Volatility	75,286	0.134	0.108	0.095
Num of Geographic Seg.	75,286	4.780	3.000	5.886
Num of Business Seg.	75,286	4.642	3.000	4.811
Institutional Ownership	75,286	0.518	0.546	0.328
Tangible Ratio	75,286	0.217	0.123	0.238
Incorp DE	75,286	0.570	1.000	0.495
Num analysts	75,286	5.622	3.000	7.172
SCA Variables				
Litigation	75,286	0.018	0	0.132
SCA Experience Variables				
Connected	65,796	0.154	0	0.13
SCA Experience at Any Firm	55,211	0.183	0	0.386
SCA Experience Diff Firm	55,211	0.086	0	0.280

Panel B: Principal Component (PC) Construction

PC Inputs

Flesch-Kincaid Readability Index (Flesch):	0.39*(#words/#sentences)+11.8*(#syllables/#words)−15.59
LIX Readability Index (LIX):	(#words/#sentences)+(#words>6 letters*100/#words)
RIX Readability Index (RIX):	(#words>6 characters)/(#sentences)
Gunning Fog Index (Fog):	0.4*(#words/#sentences)+40*(#words>2 syllables/#words)
Automated Readability Index (ARI):	4.71*(#characters/#words)+0.5*(#words/#sentences)−21.43
SMOG Index (SMOG):	1.043*sqrt(30*#words>2 syllables/#sentences)+3.1291

PC Output

Factor	Eigenvalue	Proportion of the variation explained	Cumulative Proportion of the Variation explained	Readability cMeasures	First Principal Component Weights
1st	5.55	92.53 %	92.53 %	Flesch	16.90 %
2nd	0.28	4.61 %	97.14 %	LIX	16.84 %
3rd	0.09	1.54 %	98.68 %	RIX	17.11 %
4th	0.06	0.95 %	99.63 %	Fog	16.18 %
5th	0.01	0.21 %	99.84 %	ARI	16.11 %
6th	0.01	0.16 %	100.00 %	SMOG	16.85 %

Panel C: Correlation Matrix of Readability Measures

PC Inputs		LIX	RIX	Fog	ARI	SMOG	BOG	Ln(File Size)	Ln(Word Count)
	Flesch	0.944	0.962	0.896	0.902	0.94	0.479	0.326	0.518
	LIX		0.983	0.874	0.904	0.916	0.441	0.244	0.428
	RIX			0.900	0.926	0.941	0.425	0.243	0.462
	Fog				0.802	0.983	0.471	0.296	0.476
	ARI					0.852	0.298	0.116	0.364
	SMOG						0.461	0.288	0.476
	BOG							0.393	0.475
	Ln(File Size)							0.653	

for the lagged litigation measure for the various measures also implies that we are not merely picking up a mechanical artefact of firms disclosing information about the litigation itself. Rather, it appears that firms adopt a long-lasting change to disclosure practice.

In the foregoing results, the coefficients on the control variables are consistent with expectations. Readability is worse for firms that are making a loss, potentially consistent with their greater need to explain why the firm is losing money and what steps the firm might take to improve results. Larger firms, and those with more business segments have worse readability, which is consistent with those firms' greater

Table 2
Readability and ex-post litigation
This table presents OLS regression results. The dependent variable is one of five readability measures: *Fog, PC, Bog,* ln*(File Size)* or ln*(Word Count)*. *Litigation* is a binary variable equal to one if a firm is the subject of an SCA in that year. *Lag1to3 Litigation* is a binary variable equal to one if a firm is the subject of an SCA filed in the prior three years. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. The regressions in *Panel A* include year and industry fixed effects while the regressions in *Panel B* include year and firm fixed effects. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

Panel A: Readability and Ex-post Litigation with Industry and Year Fixed Effects

	Fog	PC	Bog	ln(File Size)	ln(Word Count)
Litigation	0.135***	0.311***	0.043	0.035**	0.075***
	(5.05)	(5.40)	(0.27)	(2.32)	(6.63)
Lag1to3 Litigation	0.111***	0.272***	0.426***	0.091***	0.090***
	(4.78)	(5.70)	(2.79)	(6.55)	(9.36)
Log(MV)	0.093***	0.214***	0.668***	0.175***	0.112***
	(12.77)	(13.98)	(13.71)	(43.20)	(33.74)
Loss	0.214***	0.468***	1.994***	0.182***	0.186***
	(15.43)	(15.60)	(21.36)	(21.97)	(32.02)
M/B	−0.034***	−0.069***	−0.286***	−0.067***	−0.043***
	(−7.62)	(−7.51)	(−9.28)	(−19.50)	(−22.47)
Firm Age	−0.003***	−0.005***	−0.029***	−0.000	−0.003***
	(−4.12)	(−3.38)	(−6.25)	(−1.22)	(−9.37)
Special Item/Total Assets	−0.134**	−0.397***	−1.336***	−0.445***	−0.296***
	(−2.17)	(−3.01)	(−3.50)	(−11.79)	(−11.86)
Monthly Ret Volatility	0.304***	0.793***	6.822***	0.633***	0.713***
	(4.56)	(5.69)	(15.73)	(16.06)	(25.18)
Num of Geographic Seg.	−0.002	−0.002	−0.019*	0.006***	0.003***
	(−1.34)	(−0.60)	(−1.66)	(6.59)	(4.44)
Num of Business Seg.	0.003	0.014***	0.118***	0.008***	0.008***
	(1.31)	(2.99)	(8.37)	(6.85)	(8.01)
Institutional Ownership	0.167***	0.386***	1.809***	0.086***	0.026*
	(4.65)	(5.14)	(7.65)	(4.66)	(1.68)
Tangible Ratio	−0.328***	−0.816***	−2.736***	0.031	−0.032
	(−5.66)	(−6.85)	(−7.39)	(1.02)	(−1.34)
Incorp DE	0.089***	0.216***	0.889***	0.034***	0.061***
	(4.51)	(5.30)	(6.87)	(3.27)	(7.09)
Num Analysts	−0.002	−0.003	−0.022**	−0.002**	−0.003***
	(−1.40)	(−0.88)	(−2.00)	(−2.50)	(−4.01)
Positive	−22.314***	−30.556***	3.933	13.493***	17.233***
	(−4.48)	(−2.74)	(0.12)	(4.82)	(6.67)
Constant	18.680***	−2.941***	69.361***	11.427***	9.046***
	(106.14)	(−7.42)	(88.31)	(166.45)	(159.55)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	75,286	75,286	73,508	75,286	75,286
R-squared	0.173	0.144	0.444	0.852	0.519

Panel B: Readability and Ex-post Litigation with Firm and Year Fixed Effects

Litigation	0.138***	0.302***	0.076	0.047***	0.073***
	(6.09)	(6.16)	(0.64)	(3.14)	(7.64)
Lag1to3 Litigation	0.067***	0.156***	0.183*	0.079***	0.063***
	(3.39)	(3.59)	(1.67)	(5.58)	(7.89)
Log(MV)	0.012	0.028	0.166***	0.069***	0.021***
	(1.50)	(1.46)	(3.53)	(12.49)	(6.09)
Loss	0.075***	0.168***	0.748***	0.068***	0.073***
	(7.55)	(7.15)	(14.16)	(9.55)	(18.52)
M/B	−0.014***	−0.031***	−0.082***	−0.019***	−0.014***
	(−4.04)	(−4.27)	(−3.94)	(−7.23)	(−9.12)
Firm Age	0.005**	0.012**	−0.029**	0.004***	0.001
	(1.97)	(1.98)	(−2.25)	(3.43)	(1.19)
Special Item/Total Assets	−0.041	−0.091	−1.081***	−0.241***	−0.178***
	(−0.89)	(−0.80)	(−4.04)	(−7.04)	(−9.50)
Monthly Ret Volatility	0.135***	0.298***	3.148***	0.244***	0.297***
	(2.76)	(2.75)	(11.38)	(6.95)	(15.36)
Num of Geographic Seg.	−0.001	−0.002	−0.014	0.003***	0.002***
	(−0.73)	(−0.62)	(−1.56)	(3.28)	(3.64)
Num of Business Seg.	0.003	0.010**	0.069***	0.007***	0.007***
	(1.44)	(2.08)	(6.32)	(5.26)	(8.90)
Institutional Ownership	0.028	0.056	0.171	0.017	0.025*
	(0.76)	(0.68)	(0.83)	(0.69)	(1.69)
Tangible Ratio	−0.176**	−0.444**	−1.414***	−0.036	−0.065**
	(−2.24)	(−2.54)	(−3.62)	(−0.79)	(−2.20)
Num Analysts	0.001	0.002	0.019*	0.002**	0.001
	(0.80)	(0.64)	(1.92)	(2.12)	(1.46)
Positive	−77.360***	−162.984***	−49.779**	1.544	14.576***

(*continued on next page*)

Table 2 (*continued*)

Panel B: Readability and Ex-post Litigation with Firm and Year Fixed Effects					
	(−13.71)	(−10.27)	(−1.96)	(0.50)	(5.09)
Constant	20.106***	0.267	78.672***	12.134***	9.570***
	(279.06)	(1.40)	(213.94)	(295.02)	(285.08)
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	75,286	75,286	73,508	75,286	75,286
R-squared	0.112	0.084	0.331	0.839	0.444

complexity and need to explain larger business structures and more operations. Firms with relatively more tangible assets (as a proportion of total assets) have better readability, consistent with those firms finding it easier to explain operations. Reports that are more positive in tone tend to be slightly more readable, indicating that firms that are more optimistic may attempt to convey that positive message more clearly to readers. However, this is not always statistically significant.

We next estimate the impact of litigation on readability using an alternative specification in which the dependent variables are the annual changes in 10-K readability. The results are reported in Table 3. We use percentage changes for the readability measures *Fog, Bog,* ln*(File Size)* and ln*(Word Count)* while for the *PC* readability measure, we use the change in *PC* (since its mean is set to zero and negative values are possible). As in Table 2, the regressions in *Panel A* include year and industry fixed effects while those in *Panel B* include year and firm fixed effects. Standard errors are clustered by firm. The results indicate that for each of the readability measures, litigation is associated with a significant positive effect i.e., the changes in readability of firms' 10-Ks worsen following SCAs. We find similar results in (unreported) tests in which we use changes in the control variables rather than levels. These results overall are consistent with our core results in Table 2.

4.2. Specific attributes of report complexity

We further analyze how litigation, and litigation risk, influences specific linguistic aspects of firms' financial reports. This provides additional texture to the foregoing results, allowing us to see precise ways in which a firm alters the language it uses in its reports. We do this by repeating the foregoing analysis, but with a focus on linguistic attributes. These include the average words per sentence, complex word ratio, "litigious" word ratio (Loughran and McDonald, 2011) and the "uncertain" word ratio (Loughran and McDonald, 2011). The first two attributes are components of our composite readability measures and the last two capture additional aspects of report complexity.

We report the results in Table 4. Panel A includes industry and year fixed effects while Panel B uses firm and year fixed effects. We find that recent and past litigation experience is significantly associated with more words per sentence and a greater use of litigious words (see e.g., Panels A and B, Columns 1 and 3). This is consistent with the idea that such firms might be more circumspect and legalistic in their language to stave off future litigation concerns. Given that this change is long lasting, it is unlikely to be a mechanical outcome of these firms merely reporting on contemporaneous litigation.

There is some evidence that past litigation causes firms to use more "uncertain" words (see Column 4 of Panels A and B). This suggests that litigation experience causes firms to be less precise, specific, or assertive in their language. This is sensible as it is relatively more difficult to sue a firm for making vague statements as compared to them making specific forecasts. We provide several examples in Internet Appendix Part A to illustrate how firms tend to add nuance and qualifiers to their financial reports following SCA litigation. This is consistent with firms attempting to lower the risk that their language could provide grounds for a securities class action.[14]

4.3. Litigious words usage and excluding "Item 3. legal proceedings" from the 10-K

To ensure that the results are not merely a mechanical result of firms discussing legal matters, as opposed to learning from legal matters to refine how they write financial reports. In Table 5 we examine firms' use of "litigious words", focusing on the sample of firms that have relatively low litigious word proportions (i.e., below the industry median). The logic is that due to differences in the evolution of their disclosure policies, firms could differ in their propensity to discuss impending litigation in financial reports. In this case, we might expect firms with lower litigious word ratios to be less likely to merely evidence a mechanical relation between litigation experience and subsequent readability measures. The results, reported in Table 5, are consistent with expectations. Panel A includes industry and year fixed effects, while Panel B includes firm and year fixed effects. In these results the *lagged* litigation measure remains significantly related to worsened readability in all models. This suggests that the longer lasting effects of litigation are evident even if we consider a sample that is less likely to exhibit a mechanical impact of litigation. More recent litigation has a *slightly* weaker impact on readability in these tests. However, it remains statistically significantly related to readability in four of five models that include firm and year effects.

As discussed above, it is important to ensure that our findings are not merely an artifact of firms discussing their legal matters, as opposed to responding to litigation risk by making their reports less vulnerable to litigation. To alleviate concerns that the decrease in readability following litigation is due to firms' disclosure of SCAs, we recalculate the readability of 10-Ks after removing the "Item 3. Legal Proceedings" section of the 10-K (i.e., the section where firms discuss litigation). We restrict the sample to firm-year observations pre- and post-SCA for firms with 10-K readability available in both years. In Panel A of Table 6, we provide a summary of readability attributes of 10-Ks after excluding Item 3. There is a significant increase in the Fog measure as well as in measures such as word count, words per sentence and litigious word ratio. On the other hand, similar to Table 4, there is no significant increase in the complex and uncertain word ratios.[15]

We confirm the results from Panel A in the litigation regressions of Panel B where we include the standard control variables (and again exclude Item 3 when computing the readability measures). These results

[14] Footnote 1 provides an example of firms using more accurate but less readable language after SCA litigation.

[15] Note that, while in the paper we use the Bog value for a firm's entire 10-K (as provided by Bonsall, Leone, Miller, and Rennekamp, 2017), we are not able to compute the Bog value for the 10-K excluding Item 3 as the Bog measure is derived from a commercial software program that we do not have access to. However, we use a free version of the software to manually input the phrases for the examples we cite in part A of the Internet Appendix.

Table 3
Changes in readability and ex-post litigation
The dependent variables in the OLS regressions are the percentage change in one of four readability measures: *Fog, Bog,* ln*(File Size)* or ln*(Word Count),* or the change in *PC*. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. The regressions in *Panel A* include year and industry fixed effects while the regressions in *Panel B* include year and firm fixed effects. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

	% Change Fog	% Change Bog	% Change ln(File Size)	% Change ln(Word Count)	Change PC
Panel A: Change in Readability and Ex-post Litigation with Industry and Year Fixed Effects					
Litigation	0.004***	0.002**	0.003***	0.004***	0.208***
	(4.15)	(1.99)	(3.10)	(5.00)	(4.77)
Log(MV)	0.000	0.001***	0.001***	0.001***	0.004
	(0.64)	(7.30)	(13.82)	(6.28)	(1.36)
Loss	0.001***	0.003***	0.001***	0.002***	0.048***
	(3.30)	(8.25)	(2.94)	(6.14)	(3.27)
M/B	0.000	−0.000	−0.000	0.000	0.000
	(0.64)	(−0.45)	(−0.91)	(0.72)	(0.79)
Firm Age	0.000***	0.000	−0.000***	0.000**	0.000
	(4.26)	(0.98)	(−7.95)	(2.54)	(1.09)
Special Item/Total Assets	−0.000	−0.001*	−0.001	−0.001***	−0.007
	(−0.94)	(−1.85)	(−1.56)	(−2.61)	(−0.37)
Monthly Ret Volatility	−0.002	−0.006***	−0.000	0.001	−0.005
	(−1.20)	(−3.39)	(−0.18)	(0.73)	(−0.09)
Num of Geographic Seg.	−0.000**	−0.000***	−0.000	−0.000**	−0.002***
	(−2.19)	(−5.73)	(−1.44)	(−2.47)	(−3.71)
Num of Business Seg.	−0.000***	0.000	0.000	0.000	−0.003***
	(−2.75)	(0.59)	(0.75)	(0.07)	(−2.82)
Institutional Ownership	−0.001	0.000	−0.002***	−0.002***	−0.001
	(−1.45)	(1.02)	(−5.23)	(−3.77)	(−0.10)
Tangible Ratio	−0.001	−0.001	0.000	0.002***	−0.040*
	(−1.38)	(−1.28)	(0.40)	(3.48)	(−1.75)
Incorp DE	−0.000*	−0.001***	−0.001***	−0.001***	−0.008
	(−1.74)	(−4.03)	(−3.69)	(−4.71)	(−1.19)
Num Analysts	0.000	0.000	−0.000***	−0.000**	0.000
	(0.97)	(0.24)	(−11.43)	(−1.97)	(0.61)
Positive	−1.558***	−0.401***	−0.035	0.371***	−52.091***
	(−9.09)	(−5.47)	(−0.61)	(4.20)	(−7.96)
Constant	0.019***	0.011***	0.002	0.001	0.633***
	(8.63)	(3.98)	(1.59)	(0.84)	(7.93)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	97,840	94,478	97,840	97,840	92,183
R-squared	0.022	0.038	0.105	0.033	0.023
Panel B: Readability and Ex-post Litigation with Firm and Year Fixed Effects					
Litigation	0.004***	0.002**	0.003***	0.004***	0.199***
	(3.33)	(2.01)	(2.88)	(5.09)	(4.01)
Log(MV)	0.000	0.002***	0.002***	0.001***	0.021**
	(1.04)	(7.18)	(11.48)	(7.20)	(2.52)
Loss	0.001***	0.004***	0.001***	0.003***	0.046**
	(2.86)	(9.14)	(3.08)	(7.31)	(2.10)
M/B	0.000	−0.000***	−0.000***	−0.000	−0.000
	(0.06)	(−3.57)	(−2.93)	(−1.56)	(−0.75)
Firm Age	0.000**	−0.000	0.000	0.000***	0.004
	(2.30)	(−0.02)	(0.13)	(3.25)	(1.06)
Special Item/Total Assets	0.000	−0.001	−0.001	−0.001**	0.006
	(0.09)	(−1.62)	(−1.36)	(−2.20)	(0.33)
Monthly Ret Volatility	−0.001	−0.005**	−0.001	0.001	0.044
	(−0.51)	(−2.27)	(−0.56)	(1.12)	(0.61)
Num of Geographic Seg.	−0.000	−0.000***	−0.000	−0.000*	−0.002
	(−1.23)	(−3.26)	(−0.33)	(−1.93)	(−1.38)
Num of Business Seg.	−0.000***	0.000	0.000	0.000	−0.006**
	(−3.17)	(0.12)	(0.93)	(1.20)	(−2.53)
Institutional Ownership	−0.001	−0.001	−0.004***	−0.002**	−0.025
	(−0.69)	(−1.04)	(−3.34)	(−2.11)	(−0.75)
Tangible Ratio	−0.002	−0.003	−0.002	0.004**	−0.040
	(−1.16)	(−1.31)	(−1.10)	(2.08)	(−0.54)
Num Analysts	−0.000	0.000**	−0.000***	−0.000	−0.000
	(−0.47)	(2.55)	(−9.17)	(−0.18)	(−0.23)
Positive	−3.706***	−0.916***	−0.244**	1.119***	−131.893***
	(−9.06)	(−5.81)	(−1.99)	(5.77)	(−7.57)
Constant	0.031***	0.004*	−0.003	−0.013***	1.094***
	(8.19)	(1.75)	(−1.52)	(−5.79)	(7.60)
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes

(*continued on next page*)

Table 3 (*continued*)

Panel B: Readability and Ex-post Litigation with Firm and Year Fixed Effects					
Observations	97,840	94,478	97,840	97,840	92,183
R-squared	0.024	0.037	0.107	0.034	0.025

are consistent with firms modifying disclosures in such a way that makes the disclosures less readable in sections of the 10-K that are not discussing litigation. In Panels C and D we replicate Panels A and B, respectively, but this time include Item 3, and find similar results. That is, whether we include or exclude Item 3, readability worsens following litigation and this is not driven by firms discussing the litigation at hand.

4.4. Extensions and additional tests

This section contains several additional tests and extensions that help to bolster our results. This includes how CEOs' perception of litigation risk influences their behavior.

4.4.1. Systematic differences between litigated and non-litigated firms: propensity score matching

We ensure that systematic differences between litigated and non-litigated firms do not drive the results. We do this in several ways. We first use propensity score matching as a robustness check. Here, our "treated" firms are the firms that experience a recent litigation (i.e., our litigation indicator). We use 1:5 propensity score matching with a 0.03 caliper (following Shipman et al., 2017). We also include year and industry effects and firm clustering in this regression. Given the relatively small number of repeat observations for each firm, firm fixed effects are not apt to this sample.

The results are in Table 7 and support the main results. Panel A reports the covariate balance, Panel B reports the first stage regression in the propensity score matching approach, and Panel C reports the second stage regression. The main finding from the second stage regression (Panel C) is that litigation remains statistically significantly related to worsened readability across all readability measures, as in earlier Table 2. Similarly, past litigation statistically significantly reduces readability. These results suggest that systematic differences between litigated and non-litigated firms are unlikely to drive the results.

We also ensure that the propensity score approach does not merely reflect issues that can arise when matching with replacement. We do this by using the propensity score weighting approach, as discussed in Shipman et al. (2017). For brevity, we place these results in the Internet Appendix (Table IA.5). The results are consistent with those reported in Table 7 and in the baseline results for the paper. This suggests that the results are unlikely to be driven by systematic differences between firms that are subject to litigation and those that are not.

4.4.2. Quasi-exogenous shocks to litigation risk at the focal firm

We next address identification and causality concerns. We explore whether director experience with current litigation at *other* firms influences the reporting at the focal firm. Such experience at interlocked firms represents a quasi-exogenous source of variation in litigation experience. Further, research shows that other corporate behavior sprawls through the network of interlocked firms (Davis, 1991; Haunschild, 1993; Bizjak et al., 2009; Fracassi, 2016). We anticipate that if a director sits on the board of a firm being litigated, then all other firms she is associated with may reduce readability. While directors do not have sole responsibility for annual reports, they are expected to be cognizant of them and bear responsibility in litigation. This can cause them to directly or indirectly influence how the reports are written. This can be driven by either the knowledge gained from firsthand experience of the downsides involved in dealing with litigation (management time, firm reputation, etc.) or the perception of increased litigation risk. We define a firm as *Connected* if it is *not* currently being litigated but it is linked to at least one firm being litigated through an individual serving at both firms as an executive director, a non-executive director or a senior manager.

We report the results in Table 8. For each of the readability measures, the *Connected* coefficient is positive and significant. That is, annual report readability at the focal firm becomes less readable whether readability is measured through a composite index such as *Fog, PC*, or *Bog*, or through a thoroughness measure such as file size or word. The results are consistent with firms making 10-Ks less readable after firms that they are connected to, through a board or management interlock, experience an SCA. As indicated, the progression of litigation throughout directors' interlocking networks helps to reduce endogeneity and identification concerns.

4.4.3. How does the CEO's prior SCA experience at other firms affect readability?

We take additional steps to mitigate identification concerns regarding the relation between readability and litigation. We first investigate whether a CEO's prior litigation experience, whether at their current firm (i.e., before they were CEO) or at a prior firm influences readability at their current firm. We create two different litigation experience variables: *SCA Experience* captures litigation experience in any firm before becoming CEO at the current firm and *SCA Experience Prior Firm* captures litigation experience only gained at other firms. We anticipate that litigation experience shapes the CEO's behavior as she will be more cognizant of the risks and implications of SCAs. To the extent that prior litigation experience is exogenous to readability at the current firm, this helps to potentially reduce identification concerns.

We report the results in Table 9. In Panel A, we analyze the role of the CEO's pre-CEO experience (at any firm, including their current firm). We find that the *SCA Experience* coefficient is positive and statistically significant using each of the readability measures. Thus, a CEO's prior exposure to SCAs is associated with less readability. The effect is similar to the main results: the CEO's prior litigation experience is associated with a worsening in the Fog and Bog measures and it is also associated with longer and larger annual reports.

We next analyze the CEO's litigation experience that is limited to experience at *other* prior firms. We report these results in Panel B of Table 9. This potentially helps reduce identification concerns as it circumvents the lingering impact of litigation at the current firm. Any relation between litigation exposure at a prior firm and readability likely reflects the impact of these prior learnings. We find that prior SCA experience is associated with worse readability when we use the *Fog, PC* and *Bog* measures but its relation to readability thoroughness measures (file size and word count) is weaker than more contemporaneous experience. Overall, these results are consistent with the foregoing results in which we analyze the relation between SCAs and readability.

4.4.4. Quasi-exogenous shocks to litigation risk: the 9th circuit ruling

We further analyze changes to class actions in the 9th Circuit as a potential natural experiment. We have some misgivings about the natural experiment. However, it has seen some use in other literature (Ganguly et al., 2021; Fu et al., 2022). This natural experiment involves a court case (In re Silicon Graphics, Inc.) that made it more difficult to sue firms in the 9th Circuit courts. The oft-seen approach is to assume that firms located in 9th Circuit jurisdictions then had a significant reduction in litigation risk. We note that the 9th Circuit decision does not per se preclude forum shopping, primarily impacted firms in California, and it occurred in 1999 (thus, might have some opacity due to the role of the Sarbanes Oxley Act and the tech boom and tech wreck). We acknowledge that an appropriate subsample or selection of firms could

Table 4
Readability attributes and litigation
The dependent variable in the OLS regressions is one of four readability attributes: *Words per Sentence, Complex Word Ratio, Litigious Word Ratio* or *Uncertain Word Ratio*. We multiply *Complex Word Ratio, Litigious Word Ratio* and *Uncertain Word Ratio* by 1000 for expositional purposes. In *Panels A and B*, we repeat the analysis from Table 2 and regress readability attributes on ex-post litigation. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

	Words per Sentence	Complex Word Ratio	Litigious Word Ratio	Uncertain Word Ratio
Panel A: Readability Attributes and Ex-Post Litigation with Industry and Year Fixed Effects				
Litigation	0.376***	−0.373	1.325***	0.003
	(5.60)	(−1.18)	(10.56)	(0.04)
Lag1to3 Litigation	0.283***	−0.033	1.458***	0.352***
	(5.27)	(−0.10)	(13.59)	(5.30)
Log(MV)	0.171***	0.605***	0.286***	0.050**
	(9.83)	(6.01)	(8.76)	(2.48)
Loss	0.605***	−0.707***	0.409***	0.176***
	(18.47)	(−3.73)	(6.48)	(4.41)
M/B	−0.037***	−0.462***	−0.117***	−0.027*
	(−3.28)	(−6.37)	(−5.89)	(−1.94)
Firm Age	−0.005***	−0.020**	0.034***	−0.028***
	(−3.38)	(−2.19)	(11.02)	(−14.40)
Special Item/ Total Assets	−0.308**	−0.358	−0.247	−0.458***
	(−2.16)	(−0.47)	(−0.84)	(−2.59)
Monthly Ret Volatility	1.173***	−4.165***	0.227	1.533***
	(7.62)	(−4.83)	(0.76)	(8.09)
Num of Geographic Seg.	−0.004	−0.018	0.003	0.008
	(−0.97)	(−0.78)	(0.41)	(1.58)
Num of Business Seg.	−0.002	0.090***	0.026***	−0.034***
	(−0.40)	(3.08)	(2.66)	(−5.81)
Institutional Ownership	0.221***	1.955***	0.224	0.896***
	(2.64)	(3.93)	(1.46)	(8.77)
Tangible Ratio	−0.493***	−3.302***	−0.361	−1.201***
	(−3.82)	(−4.05)	(−1.44)	(−7.64)
Incorp DE	0.205***	0.184	0.221**	0.233***
	(4.55)	(0.67)	(2.57)	(4.10)
Num Analysts	−0.009**	0.027	0.010	0.012**
	(−2.31)	(1.23)	(1.30)	(2.51)
Positive	−110.067***	592.986***	−611.680***	176.960***
	(−9.52)	(8.15)	(−27.03)	(12.10)
Constant	22.930***	237.190***	14.318***	9.580***
	(51.51)	(68.85)	(14.48)	(29.36)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes
Observations	75,286	75,286	75,286	75,286
R-squared	0.106	0.208	0.215	0.373
Panel B: Readability Attributes and Ex-Post Litigation with Firm and Year Fixed Effects				
Litigation	0.357***	−0.172	0.984***	−0.048
	(5.97)	(−0.73)	(8.71)	(−0.77)
Lag1to3 Litigation	0.172***	−0.045	1.073***	0.141***
	(3.46)	(−0.21)	(10.79)	(2.62)
Log(MV)	−0.038*	0.689***	−0.071*	0.204***
	(−1.87)	(7.50)	(−1.88)	(9.50)
Loss	0.189***	−0.012	0.039	0.075***
	(7.37)	(−0.11)	(0.82)	(2.94)
M/B	−0.026***	−0.093**	−0.062***	−0.037***
	(−3.21)	(−2.25)	(−4.04)	(−3.79)
Firm Age	0.020***	−0.074***	0.027**	−0.007
	(2.90)	(−2.84)	(2.00)	(−0.89)
Special Item/ Total Assets	−0.140	0.293	0.343	−0.730***
	(−1.21)	(0.55)	(1.47)	(−5.55)
Monthly Ret Volatility	0.346***	−0.191	−0.135	0.550***
	(2.85)	(−0.34)	(−0.58)	(4.07)
Num of Geographic Seg.	0.000	−0.031*	0.007	0.017***
	(0.01)	(−1.71)	(0.94)	(3.81)
Num of Business Seg.	0.006	0.026	0.010	−0.000
	(1.04)	(1.12)	(1.08)	(−0.03)
Institutional Ownership	0.034	0.341	−0.058	0.539***
	(0.36)	(0.80)	(−0.33)	(5.39)
Tangible Ratio	−0.498**	0.513	−0.221	−0.214
	(−2.51)	(0.59)	(−0.64)	(−1.15)
Num Analysts	0.003	0.009	0.010	−0.004
	(0.58)	(0.46)	(1.27)	(−0.91)
Positive	−229.697***	461.779***	−835.728***	225.646***
	(−15.68)	(6.59)	(−30.66)	(15.93)
Constant	25.581***	246.018***	18.630***	8.670***
	(140.67)	(278.80)	(53.29)	(46.05)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes
Observations	75,286	75,286	75,286	75,286
R-squared	0.095	0.102	0.120	0.358

experience such a reduction in litigation. Further, we accept that the chance of *winning* might have changed after the regulation. Additionally, some of these cases might have involved improper forum shopping. Thus, it is possible that while the firms were sued, the case ultimately failed.

Therefore, in Table 10, we analyze the impact of the 9th Circuit ruling on readability. We do this by undertaking a standard difference-in-difference approach: we analyze whether readability significantly changes for firms incorporated in 9th Circuit jurisdictions around the relevant ruling (i.e., firms that experienced a reduction in their litigation risk).[16] We find that the treated firms in the 9th Circuit do indeed experience significant improvements in readability after the relevant ruling, consistent with the possibility that a potential reduction in litigation risk (conversely increase in litigation risk) is associated with better (conversely worse) readability.

4.4.5. *Instrumented readability: 1998 plain english rule and litigation risk*

We next analyze the question of reverse causality i.e., whether a firm's disclosure policy and the readability of its financial reports influences litigation risk. Such a finding would be consistent with firms making a strategic disclosure policy choice to moderate their litigation exposure. For our tests we use an instrumented measure of financial report readability and two stage least squares to analyze how readability influences litigation risk. Such an identification approach is necessary to address endogeneity concerns given our finding that litigation risk influences readability.

Since we are testing for causality in both directions, it is worth noting that in our earlier analysis we have taken several steps to mitigate

[16] We have also checked that the results are robust to interacting the "*After*" indicator with the control variables, to ameliorate some of the concerns expressed in deHaan, Moon, and Shipman (2023) about such natural experiments.

Table 5

Readability and Ex-post litigation with low litigious word sample

The dependent variable in the OLS regressions is one of five readability measures: *Fog, PC, Bog,* ln*(File Size)* or ln*(Word Count)*. The sample is restricted to firms with litigious word proportions lower than the industry median. *Litigation* is a binary variable equal to one if a firm is the subject of an SCA in that year. *Lag1to3 Litigation* is a binary variable equal to one if a firm is the subject of an SCA filed in the prior three years. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. The regressions in *Panel A* include year and industry fixed effects while the regressions in *Panel B* include year and firm fixed effects. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

Panel A: Readability and Ex-Post Litigation with Low Litigious Word Sample with Industry and Year Fixed Effects					
	Fog	PC	Bog	ln(File Size)	ln(Word Count)
Litigation	0.124***	0.267***	0.096	0.007	0.055***
	(2.77)	(2.79)	(0.32)	(0.21)	(2.76)
Lag1to3 Litigation	0.132***	0.306***	0.577**	0.112***	0.081***
	(3.57)	(4.09)	(2.23)	(4.36)	(4.73)
Log(MV)	0.070***	0.163***	0.646***	0.175***	0.109***
	(8.20)	(9.01)	(10.40)	(31.71)	(29.05)
Loss	0.167***	0.358***	1.998***	0.192***	0.178***
	(10.24)	(10.07)	(16.81)	(16.72)	(26.02)
M/B	−0.026***	−0.055***	−0.272***	−0.058***	−0.037***
	(−5.19)	(−5.29)	(−7.09)	(−11.82)	(−15.72)
Firm Age	−0.007***	−0.013***	−0.044***	−0.002***	−0.005***
	(−7.89)	(−7.02)	(−7.22)	(−2.98)	(−13.35)
Special Item/Total Assets	−0.154**	−0.384**	−1.778***	−0.390***	−0.295***
	(−2.10)	(−2.52)	(−3.48)	(−7.80)	(−10.11)
Monthly Ret Volatility	0.323***	0.701***	5.845***	0.570***	0.574***
	(4.26)	(4.58)	(10.96)	(11.28)	(18.16)
Num of Geographic Seg.	−0.002	−0.000	−0.005	0.007***	0.003***
	(−1.06)	(−0.11)	(−0.32)	(5.93)	(4.23)
Num of Business Seg.	−0.001	0.006	0.116***	0.010***	0.007***
	(−0.42)	(1.08)	(6.47)	(6.60)	(6.05)
Institutional Ownership	0.180***	0.391***	1.871***	0.088***	0.018
	(4.33)	(4.52)	(6.30)	(3.57)	(1.05)
Tangible Ratio	−0.347***	−0.822***	−3.020***	0.015	−0.048*
	(−5.14)	(−5.99)	(−6.83)	(0.38)	(−1.78)
Incorp DE	0.100***	0.247***	0.811***	0.043***	0.064***
	(4.42)	(5.27)	(5.18)	(3.16)	(6.98)
Num Analysts	−0.001	0.001	−0.031**	−0.003**	−0.003***
	(−0.41)	(0.12)	(−2.20)	(−2.47)	(−2.76)
Positive	30.685***	76.339***	69.557	15.041***	21.008***
	(5.45)	(5.38)	(1.60)	(4.03)	(8.49)
Constant	18.172***	−4.035***	69.173***	11.357***	9.026***
	(103.58)	(−13.29)	(61.62)	(168.23)	(149.20)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	37,645	37,645	36,829	37,645	37,645
R-squared	0.253	0.184	0.430	0.834	0.591
Panel B: Readability and Ex-Post Litigation with Low Litigious Word Sample with Firm and Year Fixed Effects					
Litigation	0.169***	0.359***	0.444*	0.046	0.094***
	(4.80)	(4.70)	(1.87)	(1.51)	(6.87)
Lag1to3 Litigation	0.136***	0.284***	0.471**	0.082***	0.074***
	(4.35)	(3.88)	(2.57)	(3.04)	(6.61)
Log(MV)	0.014	0.029	0.226***	0.076***	0.023***
	(1.47)	(1.12)	(3.90)	(10.28)	(5.82)
Loss	0.063***	0.122***	0.758***	0.069***	0.063***
	(5.82)	(4.22)	(10.87)	(6.86)	(14.86)
M/B	−0.009**	−0.022***	−0.088***	−0.017***	−0.012***
	(−2.33)	(−2.68)	(−3.56)	(−5.38)	(−6.74)
Firm Age	0.003	0.004	−0.030	0.005	−0.001
	(0.86)	(0.56)	(−1.10)	(1.20)	(−0.65)
Special Item/Total Assets	−0.109**	−0.167	−1.045***	−0.195***	−0.186***
	(−2.27)	(−1.13)	(−3.13)	(−4.07)	(−8.56)
Monthly Ret Volatility	0.148***	0.257**	3.158***	0.238***	0.226***
	(2.86)	(2.33)	(9.39)	(5.10)	(11.33)
Num of Geographic Seg.	−0.004**	−0.008	−0.020	0.003**	0.002**
	(−2.22)	(−1.48)	(−1.59)	(2.16)	(2.36)
Num of Business Seg.	−0.006**	−0.008	0.052***	0.006***	0.005***
	(−2.08)	(−1.33)	(3.41)	(3.13)	(4.99)
Institutional Ownership	0.105**	0.200**	0.436*	−0.019	0.047***
	(2.45)	(2.07)	(1.65)	(−0.53)	(2.90)
Tangible Ratio	−0.112	−0.245	−1.440***	0.071	0.013
	(−1.41)	(−1.37)	(−2.80)	(1.13)	(0.42)
Num Analysts	−0.001	−0.001	0.006	0.002	0.001*
	(−0.41)	(−0.28)	(0.43)	(1.62)	(1.92)
Positive	2.648	−15.802	−97.446***	3.202	14.246***

(*continued on next page*)

Table 5 (*continued*)

Panel B: Readability and Ex-Post Litigation with Low Litigious Word Sample with Firm and Year Fixed Effects					
	(0.44)	(−0.57)	(−2.84)	(0.70)	(5.78)
Constant	19.094***	−1.558***	78.213***	12.022***	9.533***
	(236.77)	(−5.17)	(156.22)	(184.36)	(280.51)
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	37,645	37,645	36,829	37,645	37,645
R-squared	0.197	0.106	0.304	0.809	0.545

concerns about various forms of endogeneity in relation to how litigation influences readability. These tests include those where we look at litigation experience at interlocked firms, those where we focus on the sub-sample of firms with relatively low litigious word counts, and tests in which we analyze the CEO's experience at other prior firms. We also take steps to mitigate issues of systematic differences between litigated and non-litigated firms by using propensity score matching.

For our current tests we use the SEC Plain English rule as an exogenous shock to readability and an instrument for financial report readability. We then analyze how this influences litigation. Effective Oct 1, 1998, the SEC enacted the Plain English Rule which requires firms to use plain English in prospectus documents, i.e., to make these documents more readable. The SEC also encouraged firms to make all other disclosures more readable. Thus, the impact of the Plain English Rule spanned more than the readability of the prospectus and, as Loughran and McDonald (2014) document, 10-Ks also became more readable after the rule was enacted. We thus use the Plain English rule as an instrumental variable for readability in the first stage of a two-stage regression to test how readability impacts litigation risk. We acknowledge that the Plain English Rule is effectively a time effect. However, we argue that when coupled with the other tests, it helps to build a mosaic through which we demonstrate the changes and effects of financial disclosure readability. That is, in the first stage we regress each of our readability measures on *Plain English*, an indicator variable that takes the value one for the years 1999 and 2000. In the second stage, we use the predicted values for readability from the first stage as an explanatory variable in the second stage. We restrict the sample to 1996–2000, i.e., two years on either side of 1998 and we exclude 1998, the year the rule is enacted.

We report the results in Table 11. The first stage regression results appear in Columns (1), (3) and (5) where the dependent variable is one of our three readability measures, the *Fog, PC* or *Bog* index, respectively. As expected, the *Plain English* coefficient is significantly negative in each of the first stage regressions, indicating that firms produce more readable 10-Ks after adoption of the Plain English Rule. The second stage regression results appear in columns (2), (4) and (6) where we regress *Litigation* on each of the predicted readability measures calculated from the first stage. The coefficients on the instrumented readability measures are all significantly negative, indicating that firms are less likely to be litigated when disclosure policies result in more complex reports with worse readability. Thus, it appears that changing readability is an effective way for firms to reduce litigation risk.

4.4.6. Litigation, readability and liquidity

Readability is economically relevant because it is expected to affect the nature of information flow to investors. It is plausible that the effect of litigation on the information flow to investors is through direct as well as indirect channels. Litigation might have a direct effect on worsening liquidity if, for instance, it leads to an increase in information asymmetry regarding the firm's litigation risk. However, liquidity might also be affected indirectly by firms attempting to decrease litigation risk by, in effect, making their financial reports more detailed and technically accurate, but at the cost of readability.

We analyze this by exploring the impact of litigation, and of changes in readability, on quoted spreads. The regressions are based on the impact of readability changes and litigation on the quoted spread change 5 days after the 10-K filing date compared to the quote spread change after last year's 10-K filing date. We use percentage changes for the readability measures *Fog* and *Bog* while for the *PC* readability measure, we use the change in *PC* (since its mean is set to zero and negative values are possible). We also explore the impact of litigation per se. We report the results in Table 12.

The results present some interesting findings. Readability has a separate and additional effect over and above litigation. Thus, both litigation and worsened readability harm liquidity, and have a separate and additive impact on liquidity. This implies that if a firm is sued, the liquidity worsens, likely reflecting a reduction in market trust for the firm's disclosures. However, this is exacerbated if those disclosures also become less readable. In this context, the market might find that the less readable reports are less able to assuage their concerns about disclosure. Alternatively, the market might believe that the firm has engaged in unnecessarily complex disclosures in order to further obfuscate. In either case, both litigation per se and worsened readability, which can flow from it, have a real impact on corporate liquidity. The fact that worsening readability widens spreads, and this impact in addition to the impact of litigation per se, might also indicate that spreads worsen not merely because the firm discusses litigation-related matters or the length of financial reports increases.

4.4.7. Litigation experience at other firms and fixed effects

We also ensure that the results are robust to the choice of fixed effects. The foregoing results have used combinations of firm, year, and industry fixed effects. The results in related litigation experience at *other* firms have used industry fixed effects (see Table 9). However, we also ensure that these results are robust to using firm fixed effects. We report the results in the Internet Appendix (Table IA.6), for brevity. The results are qualitatively similar to the main results: litigation experience in the past at either the focal firm, or a different firm, is associated with worse readability as proxied by the Fog, Bog, and PC measures. However, after including firm fixed effects, litigation experience at a *different* firm no longer increases word count. Indeed, it is negatively related to word count. This could suggest that experiencing litigation at a different firm does not per se cause the financial statements to lengthen, but does worsen the readability characteristics of the words used in those statements. This implies a worsening in readability rather than a mere increase in length.

4.4.8. Additional analyses

In additional analysis, we employ the model by Kim and Skinner (2012) to measure ex-ante litigation risk. Consistent with litigation risk being an important factor in disclosure practice and reinforcing our ex-post litigation results, we find that firms facing high ex-ante litigation risk produce less readable reports (see Table IA.1 in the Internet Appendix). We concede that the ex-ante litigation risk measure is a noisy proxy and that it is difficult to isolate litigation risk from the control variables but we believe the results are illustrative. We also explore how firms alter report readability around common litigation flashpoints such as SEOs and bond downgrades and find that readability worsens (see Tables IA.2 and IA.3 in the Internet Appendix). The results from these

Table 6
Readability attributes for 10-Ks with and without Item 3
The sample is restricted to firm-year observations pre- and post-SCA litigation. Only firms with 10-K readability available in years both prior and post litigation are included. In Panels A and B we exclude "Item 3. Legal Proceedings" from 10-Ks and calculate various readability attributes including *Fog, Words per Sentence, Complex Word Ratio, Litigious Word Ratio* or *Uncertain Word Ratio*. We multiply *Complex Word Ratio, Litigious Word Ratio* and *Uncertain Word Ratio* by 1000 for expositional purposes. Panel A presents the summary statistics of readability attributes pre- and post-SCAs. Panel B presents the OLS regression results of readability attributes and *Post*, an indicator variable for the fiscal year in which there is an SCA. Panels C and D replicate Panels A and B, respectively, but include Item 3 when computing the various readability attributes. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

Panel A: Readability Attributes for 10-Ks (Excluding Item 3) Pre- and Post-SCA

				Post - Pre			
	N	Pre SCA	Post SCA	Mean	T-stat	Median	SD
Fog	1170	20.254	20.354	0.101	3.61***	0.098	0.955
Word Count	1170	55,063	58,383	3320	2.51**	2080	45,332
Words per Sentence	1170	24.888	25.132	0.243	2.98***	0.178	2.791
Complex Word Ratio	1170	257.454	257.543	0.088	0.22	−0.004	13.654
Litigious Word Ratio	1170	11.916	12.719	0.803	3.67**	0.701	7.482
Uncertain Word Ratio	1170	13.355	13.334	−0.021	−0.21	0.038	3.336

Panel B: Readability Attributes for 10-Ks (Excluding Item 3) and Litigation

	(1)	(2)	(3)	(4)	(5)	(6)
	Fog	Log(WordCount)	Word Per Sentence	Complex Word Ratio	Litigious Word Ratio	Uncertain Word Ratio
Post	0.068**	0.085***	0.148**	0.233	0.787***	−0.143
	(2.27)	(3.42)	(2.00)	(0.55)	(3.51)	(−1.47)
Log(MV)	−0.037	0.139***	−0.073	−0.196	0.361***	−0.098
	(−1.02)	(7.89)	(−0.75)	(−0.53)	(2.60)	(−1.30)
Loss	0.170**	0.381***	0.529***	−1.026	0.753**	0.295
	(2.21)	(8.43)	(2.65)	(−1.22)	(2.02)	(1.44)
M/B	−0.001	−0.012*	0.024**	−0.272***	0.025	−0.011
	(−0.29)	(−1.89)	(2.07)	(−7.48)	(0.88)	(−0.69)
Firm Age	−0.001	−0.001	−0.011	0.077***	0.018	−0.011*
	(−0.40)	(−0.58)	(−1.34)	(2.61)	(1.65)	(−1.85)
Special Item/Total Assets	0.246	0.116	0.324	2.910*	1.122*	−0.791*
	(1.41)	(1.42)	(0.66)	(1.78)	(1.76)	(−1.70)
Monthly Ret Volatility	−0.128	0.203	0.581	−9.005***	3.373**	0.443
	(−0.43)	(1.23)	(0.79)	(−2.71)	(2.07)	(0.54)
Num of Geographic Seg.	−0.027***	−0.008**	−0.061***	−0.051	−0.033	−0.043**
	(−4.15)	(−2.09)	(−3.54)	(−0.64)	(−1.04)	(−2.27)
Num of Business Seg.	−0.005	0.001	−0.015	0.009	0.070*	−0.079***
	(−0.68)	(0.33)	(−0.68)	(0.09)	(1.90)	(−4.20)
Institutional Ownership	−0.040	0.093	−0.260	1.616	0.206	0.620*
	(−0.25)	(1.20)	(−0.70)	(1.13)	(0.33)	(1.68)
Tangible Ratio	−0.595**	−0.320***	−1.471**	−0.171	−0.267	−2.367***
	(−2.16)	(−2.71)	(−2.27)	(−0.06)	(−0.25)	(−3.89)
Incorp DE	0.094	0.018	0.403	−1.669*	0.693*	−0.007
	(0.97)	(0.39)	(1.60)	(−1.88)	(1.77)	(−0.04)
Num Analysts	0.003	−0.003	0.012	−0.043	−0.002	0.026*
	(0.50)	(−0.89)	(0.75)	(−0.67)	(−0.08)	(1.77)
Positive	41.617	−19.447	0.144	1038.972***	−288.148***	18.957
	(1.65)	(−1.29)	(0.00)	(3.44)	(−2.79)	(0.27)
Constant	19.550***	9.622***	24.267***	246.071***	6.632***	15.960***
	(52.64)	(46.57)	(26.48)	(61.19)	(4.51)	(15.69)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2340	2264	2340	2340	2340	2340
R-squared	0.142	0.213	0.129	0.182	0.094	0.129

Panel C: Readability Attributes for 10-Ks (Including Item 3) Pre- and Post-SCA

				Post - Pre			
	N	Pre SCA	Post SCA	Mean	T-stat	Median	SD
Fog	1170	20.280	20.399	0.120	4.18***	0.103	0.981
Word Count	1170	55,606	59,669	4063	4.60***	2990	30,232
Words per Sentence	1170	24.985	25.285	0.300	3.78***	0.250	2.711
Complex Word Ratio	1170	257.14	257.14	0.000	0.00	−0.060	7.135
Litigious Word Ratio	1170	12.828	12.828	1.252	10.31***	1.060	4.153
Uncertain Word Ratio	1170	15.619	15.619	−0.008	−0.15	0.063	1.922

Panel D: Readability Attributes for 10-Ks (Including Item 3) and Litigation

	(1)	(2)	(3)	(4)	(5)	(6)
	Fog	Log(WordCount)	Word Per Sentence	Complex Word Ratio	Litigious Word Ratio	Uncertain Word Ratio
Post	0.110***	0.080***	0.258***	0.159	1.141***	−0.081
	(3.54)	(6.89)	(3.08)	(0.55)	(9.15)	(−1.27)
Log(MV)	0.028	0.091***	0.023	0.470	0.211**	0.038
	(1.10)	(7.02)	(0.34)	(1.51)	(2.08)	(0.54)

(*continued on next page*)

Table 6 (*continued*)

Panel D: Readability Attributes for 10-Ks (Including Item 3) and Litigation						
Loss	0.204***	0.234***	0.479***	0.313	0.194	0.523***
	(2.93)	(8.84)	(2.73)	(0.44)	(0.72)	(2.93)
M/B	−0.005*	−0.012***	0.011	−0.234***	−0.042***	−0.010
	(−1.89)	(−2.75)	(1.35)	(−7.00)	(−3.40)	(−0.99)
Firm Age	−0.002	−0.000	−0.004	−0.013	0.043***	−0.027***
	(−1.07)	(−0.39)	(−0.77)	(−0.46)	(4.64)	(−4.56)
Special Item/Total Assets	0.430***	0.018	0.895**	1.804*	0.516	−0.586*
	(2.63)	(0.30)	(2.41)	(1.68)	(0.74)	(−1.73)
Monthly Ret Volatility	0.056	0.027	0.565	−4.254	0.602	1.185
	(0.21)	(0.21)	(0.76)	(−1.51)	(0.58)	(1.53)
Num of Geographic Seg.	−0.006	−0.004	−0.005	−0.093	−0.030	−0.025
	(−1.01)	(−1.54)	(−0.36)	(−1.44)	(−1.33)	(−1.60)
Num of Business Seg.	0.007	−0.001	0.018	−0.010	0.017	−0.077***
	(1.10)	(−0.36)	(1.12)	(−0.12)	(0.64)	(−3.87)
Institutional Ownership	0.072	0.062	−0.170	3.498**	0.024	1.014***
	(0.56)	(1.19)	(−0.53)	(2.55)	(0.05)	(3.33)
Tangible Ratio	−0.811***	−0.292***	−1.706***	−3.204	−1.180	−2.334***
	(−3.56)	(−3.47)	(−3.07)	(−1.45)	(−1.33)	(−4.67)
Incorp DE	0.119*	0.057	0.423**	−1.247	0.645**	0.356*
	(1.71)	(1.61)	(2.40)	(−1.45)	(2.23)	(1.76)
Num Analysts	0.004	−0.001	0.006	0.039	0.010	0.024*
	(0.87)	(−0.38)	(0.57)	(0.64)	(0.54)	(1.69)
Positive	−48.537	−31.308**	−169.452***	481.084	−619.408***	56.192
	(−1.48)	(−1.98)	(−3.48)	(0.88)	(−8.45)	(0.73)
Constant	19.625***	10.258***	24.756***	243.076***	11.664***	16.035***
	(50.08)	(54.46)	(35.52)	(41.05)	(11.32)	(14.02)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2340	2340	2340	2340	2340	2340
R-squared	0.112	0.297	0.082	0.196	0.255	0.209

tests corroborate our finding that the readability of firms' financial reports appear to worsen in response to litigation risk. Further, we examine whether adjusting disclosure readability is the normal response of firms to changes in their external information environment. For this we consider a context that is very different from that of SCA litigation. Brokerage mergers tend to reduce financial analyst reports, possibly exacerbating information asymmetry. We find that firms respond by enhancing report readability (see Table IA.4 in the Internet Appendix), consistent with firms attempting to improve information flow to investors and suggesting that firms appear to be strategic in terms of choosing the readability of their reports.

We also perform further tests not tabulated in the paper. We investigate whether CEOs with law degrees are associated with less readable 10-Ks. We find some evidence that this is the case but controlling for lawyer CEOs does not affect our main readability results in any discernible way. We also ensure that the results are robust to using 10-Qs rather than 10-Ks. Here, for each firm, we take the yearly average of their 10-Qs. The results are qualitatively the same as when we examine 10-Ks.

5. Conclusion

We analyze whether firms' attempts to manage litigation risk worsen report readability, inadvertently or otherwise. We start with the premise that firms and managers generally lose from securities class actions. Class actions might worsen firms' access to credit or terms of trade. They can also worsen CEOs' career prospects. One way to avoid SCAs is to alter how the firm discloses information. This can result in greater syntactical complexity, longer reports, the use of more complex words and the increased use of hedging words and qualifiers, thereby making sentences more difficult to analyze while giving the firm greater scope to claim the report is not misleading. This would inadvertently make reports less readable due to their greater complexity and more erudite language choices.

We predict, and find, that litigation risk encourages firms to take steps that ultimately reduce financial report readability. That is, firms' report readability worsens after they experience an SCA. This is the case across multiple established, and research-supported, measures of readability. The results are robust to propensity score matching procedures, suggesting that systematic differences between litigated firms and non-litigated firms do not drive the results. Further, the results hold in the subsample of firms that use relatively few 'litigious' words and when we exclude the section of the 10-K that discusses litigation, suggesting that the results are not merely a mechanical consequence of reporting on litigation.

Litigation experience also influences the *way* in which firms write their reports and their linguistic choices. In general, litigation experience – both recent and historic – drives firms to use more uncertain words, more complex words, more words per sentence and more litigious words. There is some variation across econometric specifications. However, the consistent theme is that firms are more likely to alter their language to use more qualifiers, more explanations, and fewer declaratory words (i.e., more uncertain words). Such choices would make it more difficult to argue that the firm had issued false statements as the firm could rebut such claims by pointing to the uncertainty in their statements, their use of qualifiers, or their explanations.

We provide additional support for our results and address econometric issues in addition to the aforementioned subsample analyses and propensity score matching techniques. We reduce identification concerns in several ways. CEOs' litigation experience at *different* firms at which they worked *before* the focal one influences readability at the focal firm. Further, we analyze how directors' litigation experience at other interlocked firms influences readability at the focal firm. This provides a series of director-specific quasi-exogenous shocks to litigation experience. The results from these tests are consistent with our main results. These results are also consistent with the literature that managers and directors tend to learn from prior experience in other related contexts.

Using the SEC Plain English Rule as an exogenous shock to readability, we show that altering readability is an effective way for firms to reduce litigation risk. Readability is economically relevant because it affects the nature of information flow to investors. We carry out

Table 7
Propensity score matched sample
In this table, we estimate propensity scores for firms experiencing SCAs based on the independent variables from Table 2 (excluding '*Litigation*'). We then select the non-litigated firms in the same fiscal year and industry with the closest propensity score to the litigated firm's propensity score. Matched firms are selected with replacement. We use 1:5 matching and a 0.03 caliper, following Shipman, Swanquist and Whited (2017). Covariate balance with absolute standardized mean difference and *t*-test results are reported in *Panel A*. We report first and second stage regression results in *Panels B and C*, respectively. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

Panel A: Covariate Balance

	Treatment # obs	Control # obs	Treatment Mean	Control Mean	Diff	t(Diff)	Absolute Standardized Mean Difference
Lag1to3 Litigation	1336	6004	0.124	0.116	0.007	0.747	0.027
Log(MV)	1336	6004	7.135	7.116	0.019	0.334	0.011
Loss	1336	6004	0.463	0.471	−0.008	−0.524	−0.020
M/B	1336	6004	2.093	2.141	−0.048	−0.896	−0.035
Firm Age	1336	6004	18.583	18.572	0.012	0.022	0.001
Special Item/Total Assets	1336	6004	−0.035	−0.035	0.000	0.119	0.000
Monthly Ret Volatility	1336	6004	0.166	0.169	−0.004	−1.090	−0.045
Num of Geographic Seg.	1336	6004	5.234	5.289	−0.056	−0.309	−0.012
Num of Business Seg.	1336	6004	4.440	4.454	−0.014	−0.100	−0.004
Institutional Ownership	1336	6004	0.645	0.642	0.003	0.334	0.013
Tangible Ratio	1336	6004	0.193	0.197	−0.004	−0.673	−0.024
Incorp DE	1336	6004	0.685	0.690	−0.005	−0.370	−0.014
Num Analysts	1336	6004	10.300	10.14	0.156	0.670	0.021
Positive	1336	6004	0.008	0.008	0.000	−0.490	0.000

Panel B: First Stage Regression

	Litigation
Lag1to3 Litigation	0.156***
	(3.60)
Log(MV)	0.143***
	(12.05)
Loss	0.314***
	(9.55)
M/B	−0.063***
	(−6.45)
Firm Age	−0.003***
	(−4.04)
Special Item/Total Assets	−0.559***
	(−4.11)
Monthly Ret Volatility	2.463***
	(20.08)
Num of Geographic Seg.	0.005**
	(1.98)
Num of Business Seg.	0.002
	(0.59)
Institutional Ownership	0.107**
	(2.06)
Tangible Ratio	−0.206**
	(−2.32)
Incorp DE	0.020
	(0.75)
Num Analysts	0.015***
	(6.51)
Positive	−44.378***
	(−5.50)
Constant	−3.309***
	(−23.25)
Year FE	Yes
Industry FE	Yes
Firm Cluster	Yes
Observations	75,286
R-squared	0.124

Panel C: Second Stage Regression

Litigation	0.150***	0.308***	0.067	0.051***	0.079***
	(5.15)	(5.11)	(0.39)	(3.17)	(6.72)
Lag1to3 Litigation	0.095***	0.215***	0.425*	0.102***	0.078***
	(2.62)	(2.93)	(1.86)	(4.52)	(5.22)
Log(MV)	0.053***	0.103***	0.689***	0.172***	0.095***
	(4.25)	(3.12)	(8.32)	(24.69)	(17.70)
Loss	0.195***	0.348***	2.121***	0.132***	0.172***
	(6.53)	(4.56)	(11.15)	(7.65)	(14.81)
M/B	−0.030***	−0.057***	−0.316***	−0.078***	−0.047***
	(−3.36)	(−3.20)	(−5.19)	(−14.05)	(−11.91)
Firm Age	−0.002*	−0.003	−0.025***	0.001	−0.002***
	(−1.73)	(−1.10)	(−3.28)	(1.34)	(−2.98)

(*continued on next page*)

Table 7 (*continued*)

Panel C: Second Stage Regression					
Special Item/Total Assets	−0.017	−0.206	−0.607	−0.445***	−0.291***
	(−0.14)	(−0.81)	(−0.85)	(−5.71)	(−6.12)
Monthly Ret Volatility	0.131	0.220	6.128***	0.546***	0.495***
	(1.03)	(0.79)	(7.08)	(6.50)	(8.98)
Num of Geographic Seg.	−0.003	0.003	−0.031*	0.008***	0.003***
	(−1.03)	(0.33)	(−1.70)	(5.02)	(2.74)
Num of Business Seg.	0.007*	0.014*	0.084***	0.005**	0.006***
	(1.87)	(1.76)	(3.62)	(2.36)	(3.88)
Institutional Ownership	0.172***	0.320**	2.062***	0.066**	0.011
	(2.74)	(2.22)	(5.40)	(2.11)	(0.46)
Tangible Ratio	−0.420***	−1.128***	−2.438***	0.086	−0.053
	(−3.95)	(−4.73)	(−3.79)	(1.56)	(−1.29)
Incorp DE	0.088**	0.233***	0.584***	0.023	0.062***
	(2.45)	(2.86)	(2.65)	(1.24)	(3.90)
Num Analysts	0.001	0.005	−0.033**	−0.004***	−0.003***
	(0.33)	(1.02)	(−2.00)	(−3.06)	(−2.84)
Positive	−28.364***	−60.462**	51.561	7.171	2.653
	(−2.92)	(−2.29)	(0.87)	(1.35)	(0.57)
Constant	18.978***	−2.354***	69.123***	11.491***	9.271***
	(87.99)	(−4.58)	(65.04)	(121.51)	(118.50)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	7340	7340	7142	7340	7340
R-squared	0.195	0.142	0.483	0.874	0.497

Table 8

Readability and current litigation exposure at other firms

The dependent variable in the OLS regressions is one of five readability measures: *Fog, PC* or *Bog,* ln*(File Size)* or ln*(Word Count)*. *Connected* is a binary variable equal to one if the firm is not litigated but is linked to at least one litigated firm through an individual serving at both firms as an executive director, non-executive director, or senior manager as of the SCA filing date. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

	Fog	PC	Bog	ln(File Size)	ln(Word Count)
Connected	0.045***	0.112***	0.367***	0.023***	0.021***
	(3.04)	(3.49)	(3.82)	(2.82)	(3.58)
Lag1to3 Connected	0.106***	0.260***	0.333**	0.084***	0.089***
	(4.35)	(5.12)	(2.05)	(5.74)	(8.89)
Log(MV)	0.092***	0.214***	0.684***	0.183***	0.116***
	(11.95)	(13.00)	(13.28)	(41.49)	(33.17)
Loss	0.215***	0.474***	1.954***	0.172***	0.182***
	(14.52)	(14.56)	(19.67)	(19.24)	(29.43)
M/B	−0.032***	−0.065***	−0.336***	−0.079***	−0.048***
	(−5.94)	(−5.73)	(−8.83)	(−18.62)	(−21.92)
Firm Age	−0.003***	−0.005***	−0.029***	−0.001	−0.003***
	(−4.26)	(−3.57)	(−5.95)	(−1.38)	(−9.70)
Special Item/Total Assets	−0.109	−0.346**	−1.201***	−0.427***	−0.279***
	(−1.57)	(−2.32)	(−2.80)	(−10.22)	(−10.04)
Monthly Ret Volatility	0.315***	0.827***	7.112***	0.680***	0.748***
	(4.28)	(5.30)	(15.08)	(15.17)	(24.09)
Num of Geographic Seg.	−0.002	−0.001	−0.017	0.006***	0.004***
	(−1.01)	(−0.22)	(−1.39)	(6.68)	(5.04)
Num of Business Seg.	0.004	0.016***	0.123***	0.008***	0.009***
	(1.60)	(3.23)	(8.35)	(7.09)	(8.61)
Institutional Ownership	0.156***	0.373***	1.800***	0.077***	0.019
	(4.17)	(4.72)	(7.26)	(3.91)	(1.18)
Tangible Ratio	−0.321***	−0.803***	−2.656***	0.032	−0.034
	(−5.24)	(−6.30)	(−6.73)	(0.95)	(−1.36)
Incorp DE	0.087***	0.218***	0.879***	0.033***	0.061***
	(4.18)	(4.99)	(6.43)	(2.98)	(6.74)
Num Analysts	−0.003*	−0.004	−0.028**	−0.003***	−0.004***
	(−1.68)	(−1.22)	(−2.51)	(−3.51)	(−4.85)
Positive	−20.445***	−29.380**	2.939	15.173***	16.635***
	(−3.84)	(−2.41)	(0.08)	(5.00)	(6.01)
Constant	18.640***	−3.059***	68.994***	11.439***	9.016***
	(97.00)	(−6.85)	(84.33)	(148.49)	(146.81)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	65,796	65,796	64,195	65,796	65,796
R-squared	0.168	0.139	0.437	0.842	0.507

Table 9
Readability and past litigation exposure
The dependent variable in the OLS regressions is one of five readability measures: *Fog, PC, Bog,* ln*(File Size)* or ln*(Word Count)*. *SCA Experience* is a binary variable equal to one if the CEO has worked as a director, executive, or senior manager at a firm that was subject to an SCA while she was there. *SCA Experience Diff Firm* is a binary variable equal to one if the CEO's SCA experience was away from the current firm. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. The regressions in *Panel A* include year and industry fixed effects while the regressions in *Panel B* include year and firm fixed effects. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

Panel A: Readability and Past Litigation Exposure with Industry and Year Fixed Effects					
	Fog	PC	Bog	ln(File Size)	ln(Word Count)
SCA Experience at Any Firm	0.097***	0.246***	0.536***	0.042***	0.049***
	(4.42)	(5.13)	(3.57)	(3.57)	(5.21)
Log(MV)	0.091***	0.215***	0.715***	0.184***	0.121***
	(10.76)	(11.56)	(11.95)	(39.57)	(31.89)
Loss	0.203***	0.465***	1.806***	0.148***	0.177***
	(12.92)	(13.04)	(16.87)	(15.75)	(27.09)
M/B	−0.035***	−0.077***	−0.387***	−0.075***	−0.053***
	(−6.13)	(−6.36)	(−9.43)	(−21.57)	(−22.01)
Firm Age	−0.003***	−0.005***	−0.028***	0.000	−0.003***
	(−4.09)	(−3.46)	(−5.51)	(0.58)	(−8.21)
Special Item/Total Assets	−0.069	−0.255	−1.056**	−0.425***	−0.225***
	(−0.83)	(−1.38)	(−2.00)	(−8.21)	(−6.66)
Monthly Ret Volatility	0.500***	1.260***	8.418***	0.599***	0.860***
	(5.71)	(6.66)	(14.42)	(11.10)	(23.09)
Num of Geographic Seg.	−0.003*	−0.004	−0.022*	0.006***	0.003***
	(−1.77)	(−1.10)	(−1.72)	(6.23)	(3.83)
Num of Business Seg.	0.002	0.013**	0.116***	0.007***	0.007***
	(0.98)	(2.48)	(7.29)	(5.39)	(6.51)
Institutional Ownership	0.119***	0.301***	1.715***	0.067***	0.027
	(2.96)	(3.47)	(6.34)	(3.25)	(1.57)
Tangible Ratio	−0.349***	−0.891***	−2.648***	−0.008	−0.046*
	(−5.23)	(−6.32)	(−6.09)	(−0.23)	(−1.69)
Incorp DE	0.069***	0.188***	0.737***	0.038***	0.064***
	(3.03)	(3.86)	(4.90)	(3.20)	(6.43)
Num Analysts	−0.002	−0.003	−0.029**	−0.003***	−0.004***
	(−1.29)	(−0.82)	(−2.47)	(−3.78)	(−5.11)
Positive	−25.214***	−43.851***	−14.612	8.905***	13.712***
	(−4.31)	(−3.13)	(−0.36)	(2.82)	(4.48)
Constant	18.934***	−2.620***	68.486***	11.508***	8.975***
	(82.23)	(−4.83)	(66.77)	(164.86)	(128.76)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	55,211	55,211	53,919	55,211	55,211
R-squared	0.153	0.125	0.425	0.825	0.455
Panel B: Readability and Past Litigation Exposure at The Other Firm with Industry and Year Fixed Effects					
SCA Experience Diff Firm	0.091***	0.202***	0.704***	0.004	0.015
	(3.35)	(3.44)	(3.70)	(0.27)	(1.24)
Log(MV)	0.093***	0.220***	0.720***	0.185***	0.123***
	(10.97)	(11.87)	(12.08)	(39.86)	(32.23)
Loss	0.205***	0.471***	1.810***	0.150***	0.179***
	(13.07)	(13.28)	(16.94)	(15.94)	(27.35)
M/B	−0.036***	−0.079***	−0.389***	−0.076***	−0.053***
	(−6.23)	(−6.50)	(−9.47)	(−21.71)	(−22.22)
Firm Age	−0.003***	−0.005***	−0.028***	0.000	−0.003***
	(−4.07)	(−3.45)	(−5.49)	(0.58)	(−8.20)
Special Item/Total Assets	−0.072	−0.263	−1.069**	−0.427***	−0.227***
	(−0.87)	(−1.42)	(−2.02)	(−8.23)	(−6.73)
Monthly Ret Volatility	0.530***	1.335***	8.578***	0.612***	0.875***
	(6.02)	(7.03)	(14.64)	(11.33)	(23.35)
Num of Geographic Seg.	−0.003	−0.004	−0.020	0.006***	0.003***
	(−1.63)	(−0.94)	(−1.62)	(6.33)	(4.00)
Num of Business Seg.	0.002	0.013**	0.115***	0.007***	0.007***
	(0.95)	(2.46)	(7.25)	(5.39)	(6.50)
Institutional Ownership	0.119***	0.300***	1.713***	0.067***	0.027
	(2.96)	(3.45)	(6.34)	(3.22)	(1.55)
Tangible Ratio	−0.351***	−0.899***	−2.645***	−0.012	−0.050*
	(−5.27)	(−6.38)	(−6.08)	(−0.34)	(−1.82)
Incorp DE	0.069***	0.190***	0.736***	0.039***	0.065***
	(3.05)	(3.90)	(4.90)	(3.28)	(6.51)
Num Analysts	−0.002	−0.002	−0.027**	−0.003***	−0.004***
	(−1.03)	(−0.50)	(−2.28)	(−3.52)	(−4.76)
Positive	−25.810***	−45.280***	−18.475	8.744***	13.494***
	(−4.41)	(−3.23)	(−0.46)	(2.77)	(4.40)
Constant	18.914***	−2.674***	68.394***	11.496***	8.962***
	(82.14)	(−4.91)	(66.68)	(160.12)	(125.17)

(*continued on next page*)

Table 9 (*continued*)

Panel B: Readability and Past Litigation Exposure at The Other Firm with Industry and Year Fixed Effects					
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes
Observations	55,211	55,211	53,919	55,211	55,211
R-squared	0.153	0.124	0.425	0.825	0.454

Table 10
Readability and the ninth circuit ruling
This table reports OLS regressions that use the 9th Circuit decision in 1999 as a quasi-exogenous shock to litigation risk. *9th Circuit State* is an indicator that equals one if the firm is in a 9th Circuit jurisdiction. *After* is an indicator that equals one if the observation post-dates the 9th Circuit decision. See the Appendix for all variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. The regressions include year and industry fixed effects. Superscripts ***, **, and * denote significance at 1 %, 5 %, and 10 %, respectively.

	Whole Sample			1997–2001 Excluding Year 1999		
	Fog	PC	Bog	Fog	PC	Bog
9th Circuit State	0.108***	0.159***	1.493***	0.091***	0.134**	1.075***
	(3.62)	(3.19)	(7.55)	(2.78)	(2.45)	(5.34)
After	0.278***	0.589***	8.805***	−0.227***	−0.346***	−0.620***
	(3.55)	(3.94)	(8.48)	(−8.19)	(−7.27)	(−4.30)
9th Circuit State*After	−0.174***	−0.261***	−1.702***	−0.369***	−0.630***	−1.451***
	(−5.59)	(−4.98)	(−8.58)	(−10.62)	(−10.63)	(−7.58)
Log(MV)	0.106***	0.201***	0.627***	0.123***	0.224***	0.548***
	(16.48)	(18.19)	(14.87)	(13.17)	(14.28)	(10.24)
Loss	0.254***	0.458***	2.188***	0.299***	0.513***	2.537***
	(18.92)	(19.91)	(25.51)	(12.45)	(12.67)	(18.97)
M/B	−0.000***	−0.000	−0.000	−0.018***	−0.029***	−0.071***
	(−3.36)	(−1.20)	(−0.78)	(−4.44)	(−4.15)	(−3.03)
Firm Age	−0.005***	−0.008***	−0.043***	−0.006***	−0.009***	−0.079***
	(−6.77)	(−6.62)	(−9.41)	(−4.64)	(−4.28)	(−11.75)
Special Item/Total Assets	−0.024**	−0.052***	−0.123	−0.032*	−0.064**	−0.081
	(−2.20)	(−2.75)	(−1.45)	(−1.92)	(−2.34)	(−1.22)
Monthly Ret Volatility	0.091*	0.285***	3.896***	−0.058	−0.009	1.622***
	(1.83)	(3.33)	(11.45)	(−0.80)	(−0.07)	(3.60)
Num of Geographic Seg.	−0.002	−0.002	−0.011	0.001	0.004	0.024
	(−1.58)	(−0.74)	(−1.10)	(0.17)	(0.69)	(1.42)
Num of Business Seg.	0.003	0.012***	0.137***	0.009**	0.023***	0.172***
	(1.49)	(3.21)	(9.93)	(2.39)	(3.56)	(8.76)
Institutional Ownership	0.161***	0.311***	1.585***	0.332***	0.544***	1.224***
	(4.97)	(5.52)	(7.39)	(6.17)	(6.04)	(4.09)
Tangible Ratio	−0.305***	−0.631***	−2.402***	−0.283***	−0.574***	−3.612***
	(−5.66)	(−6.92)	(−7.28)	(−3.64)	(−4.40)	(−8.01)
Incorp DE	0.115***	0.237***	1.045***	0.105***	0.205***	1.180***
	(6.15)	(7.41)	(8.64)	(4.09)	(4.74)	(7.99)
Num Analysts	−0.004***	−0.005**	−0.033***	0.001	0.001	−0.026*
	(−2.60)	(−1.99)	(−3.38)	(0.21)	(0.21)	(−1.71)
Positive	−26.495***	−20.219**	29.402	−30.267***	−16.034	19.166
	(−5.23)	(−2.38)	(1.03)	(−4.79)	(−1.57)	(0.57)
Constant	18.803***	−2.331***	69.661***	18.835***	−2.222***	71.484***
	(97.89)	(−7.12)	(92.75)	(65.04)	(−4.71)	(73.51)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	96,284	96,284	94,208	23,106	23,106	22,706
R-squared	0.139	0.141	0.441	0.114	0.111	0.334

mediation analysis and find that litigation has both a significant direct effect on the quoted spread as well as an indirect effect via changes in the readability of financial reports.

We add to both the strategic reporting and the litigation literatures by showing that firms face a trade-off in terms of providing financial reports that are longer and more complex – but less accessible to many investors – against the risk of shareholder lawsuits. We provide evidence that 10-K readability worsens when firms face relatively high litigation risk. We also highlight that CEOs and directors learn from prior experience at other firms. These results help to explain, at least in part, why firms continue to produce opaque annual reports despite continued calls for increased disclosure clarity.

CRediT authorship contribution statement

Mark Humphery-Jenner: . **Yun Liu:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Vikram Nanda:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Sabatino Silveri:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Minxing Sun:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Data availability

Data will be made available on request.

Table 11
Litigation risk and instrumented readability
This table contains two-stage regression results examining the impact of readability on litigation likelihood using the 1998 Plain English Rule as an instrumental variable. The sample spans the years 1996–2000, excluding 1998. The dependent variable in the first stage regression is one of three readability measures: *Fog* (Model 1), *PC* (Model 3) or *Bog* (Model (5). The predicted values from these regressions (*Instrumented Fog, Instrumented PC and Instrumented Bog*) are used in the second stage regressions. The dependent variable in the second stage regressions is Litigation_{t+1}, a binary variable equal to one if a firm is subject to an SCA in the following year. See the Appendix for variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

Dependent Variable	Fog (1)	Litigation (2)	PC (3)	Litigation (4)	Bog (5)	Litigation (6)
Plain English	−0.130***		−0.267***		−2.093***	
	(−5.83)		(−6.49)		(−15.85)	
Instrumented Fog		−0.050***				
		(−2.87)				
Instrumented PC				−0.024***		
				(−2.94)		
Instrumented Bog						−0.003***
						(−3.28)
Log(MV)	0.188***	0.018***	0.357***	0.017***	0.635***	0.011***
	(25.04)	(5.25)	(25.94)	(5.56)	(13.11)	(10.92)
Sales Growth	−0.052**	0.014***	−0.087**	0.014***	−0.354**	0.015***
	(−2.30)	(4.49)	(−2.07)	(4.77)	(−2.43)	(5.42)
R&D/Sales	0.066***	0.001	0.112***	0.000	1.545***	0.003
	(7.42)	(0.61)	(7.04)	(0.31)	(16.82)	(1.40)
Tangible Ratio	−0.414***	−0.033***	−0.880***	−0.034***	−3.301***	−0.023***
	(−7.40)	(−4.08)	(−8.63)	(−4.19)	(−9.13)	(−5.00)
M/B	−0.028***	0.002*	−0.044***	0.002**	0.173***	0.004***
	(−5.53)	(1.80)	(−4.74)	(2.30)	(4.40)	(4.21)
Adj Mkt Ret Before Litigation	−0.115***	−0.029***	−0.241***	−0.029***	−0.730***	−0.026***
	(−10.63)	(−10.13)	(−12.15)	(−10.20)	(−9.81)	(−12.90)
Skewness Before Litigation	−0.032***	−0.009***	−0.081***	−0.009***	−0.325***	−0.008***
	(−2.78)	(−6.68)	(−3.89)	(−6.92)	(−4.67)	(−7.09)
Volatility Before Litigation	0.562***	0.217***	1.608***	0.228***	14.376***	0.236***
	(5.40)	(11.03)	(8.33)	(10.53)	(20.92)	(10.60)
Num of Geographic Seg.	−0.012***	−0.001	−0.010	−0.000	0.152***	0.001*
	(−3.71)	(−1.16)	(−1.60)	(−0.38)	(7.27)	(1.71)
Num of Business Seg.	0.013***	0.000	0.035***	0.000	0.266***	0.000
	(3.29)	(0.27)	(4.74)	(0.89)	(11.27)	(1.08)
Firm Age	−0.011***	−0.001***	−0.019***	−0.001***	−0.085***	−0.000***
	(−9.74)	(−3.49)	(−8.49)	(−3.64)	(−10.66)	(−4.21)
Constant	18.952***	0.882***	−1.434***	−0.096***	75.206***	0.179**
	(430.11)	(2.69)	(−18.04)	(−6.94)	(263.41)	(2.48)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,774	20,774	20,774	20,774	20,402	20,402
R-squared	0.078	−0.180	0.084	−0.134	0.148	0.024

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jbankfin.2024.107180.

Appendix: Variable Definitions

Variable Name	Definition
Readability or Tone Related Measures	
Fog	0.4*(words/sentences+100*number of words with at least 3 syllables/number of words)
Bog	sentence bog+word bog-pep (Bonsall et al., 2017)
	sentence bog=(average sentence length)^2/long sentence limit (see Bonsall et al., 2017 for further details)
	word bog=(style problems+heavy words+abbreviations+specialist)*250/number of words (see Bonsall et al., 2017 for further details)
	pep=((names+interest words+conversational)*25/number of words)+sentence variety (see Bonsall et al., 2017 for further details)
PC	the first principal component derived from the following six measures: Flesch-Kincaid readability, LIX readability, RIX readability, Gunning Fog readability, ARI readability, and SMOG readability
% Change Readability	(readability – lag(readability))/lag(readability)
Change PC	PC – Lag(PC)
ln(File Size)	the natural logarithm of the file size in megabytes of the SEC EDGAR "complete submission text file" for the 10-K filing
ln(Word Count)	the natural logarithm of the total number of words
Words per Sentence	the average number of words per sentence
Complex Word Ratio	the number of words with three or more syllables scaled by the number of words as defined in Loughran and McDonald (2011)
Litigious Word Ratio	the number of litigious words scaled by the number of words as defined in Loughran and McDonald (2011)
Uncertain Word Ratio	the number of uncertain words scaled by the number of words as defined in Loughran and McDonald (2011)
Positive	the number of positive words scaled by the number of words as defined in Loughran and McDonald (2011)

(*continued on next page*)

Table 12
Litigation, readability and liquidity
This table contains regression results examining the impact of readability and litigation on quoted spread change 5 days after the 10-K filing date. The dependent variable,*% Change QSpread*, is percentage change in quoted spreads. See the Appendix for variable definitions. *t*-statistics, computed with standard errors clustered at the firm level, are reported in parentheses below the coefficient. Superscripts ***, ** and *denote significance at 1 %, 5 % and 10 %, respectively.

	% Change QSpread (1)	% Change QSpread (2)	% Change QSpread (3)	% Change QSpread (4)	% Change QSpread (5)	% Change QSpread (6)	% Change QSpread (7)
Litigation	0.290***		0.289***		0.288***		0.289***
	(6.42)		(6.39)		(6.29)		(6.39)
% Change Fog		0.174**	0.159**				
		(2.20)	(2.00)				
% Change Bog				0.483**	0.470**		
				(2.47)	(2.40)		
Change PC						0.004**	0.004*
						(2.01)	(1.79)
Log(MV)	−0.069***	−0.067***	−0.069***	−0.066***	−0.068***	−0.067***	−0.069***
	(−15.67)	(−15.13)	(−15.66)	(−15.30)	(−15.86)	(−15.13)	(−15.66)
M/B	−0.013**	−0.013**	−0.013**	−0.013**	−0.013**	−0.013**	−0.013**
	(−2.17)	(−2.13)	(−2.17)	(−2.13)	(−2.17)	(−2.13)	(−2.17)
Tangible Ratio	0.117***	0.115***	0.117***	0.118***	0.120***	0.115***	0.117***
	(4.25)	(4.16)	(4.25)	(4.18)	(4.27)	(4.16)	(4.25)
Price 5 Days	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.65)	(0.45)	(0.66)	(0.39)	(0.60)	(0.45)	(0.66)
Volatility 5 Days	7.423***	7.470***	7.427***	7.521***	7.478***	7.470***	7.426***
	(9.49)	(9.51)	(9.48)	(9.40)	(9.38)	(9.51)	(9.49)
CAR 5 Days	−0.945***	−0.956***	−0.946***	−0.935***	−0.925***	−0.956***	−0.946***
	(−5.19)	(−5.24)	(−5.20)	(−5.04)	(−5.00)	(−5.23)	(−5.20)
Constant	−0.146**	−0.159**	−0.147**	−0.171**	−0.159**	−0.159**	−0.147**
	(−2.03)	(−2.21)	(−2.04)	(−2.39)	(−2.22)	(−2.21)	(−2.04)
Observations	35,209	35,208	35,208	34,297	34,297	35,209	35,209
R-squared	0.273	0.272	0.273	0.276	0.277	0.272	0.273

(*continued*)

Variable Name	Definition
Readability or Tone Related Measures	
SCA Variables	
Litigation	a binary variable equal to one if a firm has at least one SCA filed during the year
SCA Experience Variables	
Connected	a binary variable equal to one if the firm is not litigated but is linked to at least one litigated firm through an individual serving at both firms as an executive director, non-executive director, or senior manager at SCA filing date.
SCA Experience	a binary variable equal to one if the CEO has worked as a director, executive, or senior manager at a firm that was subject to an SCA while she was there
SCA Experience Diff Firm	a binary variable equal to one if the CEO's SCA experience is at a different firm to the current one
Firm Characteristics	
Log(MV)	log(market value)
Loss	a binary variable equal to one if net income is negative
M/B	(market price at the end of fiscal year*number of shares outstanding+ total liability)/ total assets
Firm Age	current year minus first year the firm appears in CRSP
Special Item/Total Assets	special items/total assets
Monthly Ret Volatility	return volatility using 12 monthly returns in a fiscal year
Num of Geographic Seg.	number of geographic segments
Num of Business Seg.	number of business segments
Institutional Ownership	institutional ownership percentage
Tangible Ratio	net property, plant and equipment/total assets
Incorp DE	a binary variable equal to one if firm is incorporated in Delaware
Num analysts	number of analysts following
Variables Used in Litigation Probability Regression	
Adj Mkt Ret Before Litigation	adjusted market return 12 months prior to the litigation date. If there is no litigation, then it is 12 months prior to the fiscal year-end
Skewness Before Litigation	return skewness calculated using 12 monthly returns prior to the litigation date. If there is no litigation, then we use the 12 monthly returns prior to the fiscal year-end
Volatility Before Litigation	return volatility calculated using 12 monthly returns prior to the litigation date. If there is no litigation, then we use the 12 monthly returns prior to the fiscal year-end
Sales Growth	(sales-last year's sales)/last year total assets
R&D/Sales	research and development expenses/sales. If R&D is missing, then it is set to 0
Variables Used in Market Liquidity Regression	
% Change QSpread	(Average quoted spread 5 days after 10-K filing date - Average quoted spread 5 days after last 10-K)/Average quoted spread 5 days after last 10-K
Price 5 Days	average stock price within 5 days after 10-K filing date
Volatility 5 Days	stock return volatility within 5 days after 10-K filing date
CAR 5 days	cumulative Abnormal return within 5 days after 10-K filing date

References

Aktas, N., De Bodt, E., Roll, R., 2013. Learning from repetitive acquisitions: evidence from the time between deals. J. Financ. Econ. 108 (1), 99–117.

Autore, D., Hutton, I., Peterson, D.R., Smith, A.H., 2014. The effect of securities litigation on external financing. J. Corpor. Finance 27, 231–250.

Baginski, S.P., Hassell, JM., Kimbrough, M.D., 2002. The effect of legal environment on voluntary disclosure: evidence from management earnings forecasts issued in US and Canadian markets. Account. Rev. 77 (1), 25–50.

Bernile, G., Ghagwat, V., Rau, R., 2017. What doesn't kill you will only make you more risk-loving: early-life disasters and CEO behavior. J. Finance 72 (1), 167–206.

Beyer, A., Cohen, D.A., Lys, T.Z., Walther, B.R., 2010. The financial reporting environment: review of the recent literature. J. Account. Econ. 50 (2), 296–343.

Biddle, GC., Hilary, G., Verdi, R.S., 2009. How does financial reporting quality relate to investment efficiency? J. Account. Econ. 48 (2–3), 112–131.

Bizjak, J., Lemmon, M., Whitby, R., 2009. Option backdating and board interlocks. Rev. Financ. Stud. 22 (11), 4821–4847.

Bonsall, I.V., Samuel, B., Miller, B.P., 2017a. The impact of narrative disclosure readability on bond ratings and the cost of debt. Rev. Account. Stud. 22 (2), 608–643.

Bonsall, I.V., Samuel, B., Leone, A.J., Miller, B.P., Rennekamp, K., 2017b. A plain English measure of financial reporting readability. J. Account. Econ. 63 (2–3), 329–357.

Choi, S.J., Nelson, K.K., Pritchard, AC., 2009. The screening effect of the private securities litigation reform act. J. Empir. Leg. Stud. 6 (1), 35–68.

Crane, AD., Koch, A., 2018. Shareholder litigation and ownership structure: evidence from a natural experiment. Manage. Sci. 64 (1), 5–23.

Davis, G.F., 1991. Agents without principles? The spread of the poison pill through the intercorporate network. Adm. Sci. Q. 583–613.

deHaan, Ed, James, R., Moon Jr, Jonathan, E., Shipman, Swanquist, Q.T., Whited, R.L., 2023. Control variables in interactive models. J. Financ. Rep. 8 (2), 77–85, 2023.

Donelson, DC., Flam, R.W., Yust, C.G., 2022. Spillover effects in disclosure-related securities litigation. Account. Rev. 97 (5), 275–299.

Dougal, C., Engelberg, J., Garcia, D., Parsons, C.A., 2012. Journalists and the stock market. Rev. Financ. Stud. 25 (3), 639–679.

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

Fracassi, C., 2016. Corporate finance policies and social networks. Manage. Sci. 63 (8), 2420–2438.

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

Frost, C.A., Pownall, G., 1994. Accounting disclosure practices in the United States and the United Kingdom. J. Account. Res. 32 (1), 75–102.

Fu, S., Wang, Ke, Zhang, L., Zheng, L., 2022. Working Paper.

Ganguly, A., Ganguly, A., Ge, L., Zutter, CJ., 2021. Working Paper.

Guay, W., Samuels, D., Taylor, D., 2016. Guiding through the fog: financial statement complexity and voluntary disclosure. J. Account. Econ. 62 (2–3), 234–269.

Gunning, R. "The technique of clear writing." (1952).

Haunschild, P.R., 1993. Interorganizational imitation: the impact of interlocks on corporate acquisition activity. Adm. Sci. Q. 564–592.

Humphery-Jenner, M.L., 2012. Internal and external discipline following securities class actions. J. Financ. Intermed. 21 (1), 151–179.

Humphery-Jenner, M.L., Powell, R., Zhang, E., 2019. Practice makes progress: evidence from divestitures. J. Bank. Finance 105, 1–19.

Hwang, B.-H., Kim, H.H., 2017. It pays to write well. J. Financ. Econ. 124 (2), 373–394.

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

Karpoff, J.M., Jr, J.R.L, 1993. The reputational penalty firms bear from committing criminal fraud. J. Law Econ. 36 (2), 757–802.

Karpoff, J.M., Lee, D.S., Martin, G.S., 2008. The consequences to managers for financial misrepresentation. J. Financ. Econ. 88 (2), 193–215.

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

Lawrence, A., 2013. Individual investors and financial disclosure. J. Account. Econ. 56 (1), 130–147.

Lehavy, R., Li, F., Merkley, K., 2011. The effect of annual report readability on analyst following and the properties of their earnings forecasts. Account. Rev. 86 (3), 1087–1115.

Loughran, T., McDonald, B., 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. J. Finance 66 (1), 35–65.

Loughran, T., McDonald, B., 2014. Measuring readability in financial disclosures. J. Finance 69 (4), 1643–1671.

Loughran, T., McDonald, B., 2020. Textual analysis in finance. Ann. Rev. Financ. Econ. 12, 357–375.

Lev, B., 1992. Information disclosure strategy. Calif. Manage. Rev. 34 (4), 9–32.

Li, F., 2008. Annual report readability, current earnings, and earnings persistence. J. Account. Econ. 45 (2), 221–247.

Li, Y., Zhang, L., 2015. Short selling pressure, stock price behavior, and management forecast precision: evidence from a natural experiment. J. Account. Res. 53 (1), 79–117.

Lo, K., Ramos, F., Rogo, R., 2017. Earnings management and annual report readability. J. Account. Econ. 63 (1), 1–25.

Miller, B.P., 2010. The effects of reporting complexity on small and large investor trading. Account. Rev. 85 (6), 2107–2143.

Nelson, K.K., Pritchard, AC., 2016. Carrot or stick? The shift from voluntary to mandatory disclosure of risk factors. J. Empir. Leg. Stud. 13 (2), 266–297.

Rennekamp, K., 2012. Processing fluency and investors' reactions to disclosure readability. J. Account. Res. 50 (5), 1319–1354.

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

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

Shropshire, C., 2010. The role of the interlocking director and board receptivity in the diffusion of practices. Acad. Manage. J. 35 (2), 246–264.

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

Shipman, J.E., Swanquist, Q.T., Whited, R.L., 2017. Propensity score matching in accounting research. Account. Rev. 92 (1), 213–244.

You, H., Zhang, X.-J., 2009. Financial reporting complexity and investor underreaction to 10-K information. Rev. Account. Stud. 14 (4), 559–586.

Yuan, Q., Zhang, Y., 2015. Do banks price litigation risk in debt contracting? Evidence from class action lawsuits. J. Bus. Finance Account. 42 (9–10), 1310–1340.

Yuan, Q., Zhang, Y., 2016. The real effects of corporate fraud: evidence from class action lawsuits. Account. Finance 56 (3), 879–911.