Narrative Conservatism

Juan Manuel García Lara, Beatriz García Osma, and Fengzhi Zhu*

Department of Business Administration, Universidad Carlos III de Madrid, Spain

Dated: September 20, 2020

Abstract

Prior literature documents the existence of conditional and unconditional conservatism, which mainly manifest in the form of accounting numbers through the recognized line items in financial statements. However, little is known about conservatism in narrative disclosure. We study whether narrative disclosure is conservative, i.e., whether narratives respond to bad news in a more complete, news-consistent and timely manner than good news. We proxy news by the market returns and measure completeness by the number of words, news-consistency by the marginal change of narrative tone in response to news, and timeliness by the reporting time lag between news release date and disclosure filing date. Using 10-Q and 8-K filings from 1993 to 2020, we find that on average narratives have more number of words, greater marginal change of tone and shorter reporting time lag in response to bad news relative to good news, consistent with narratives being conservative. Moreover, we show that firms emphasize bad news more than good news via 10-Q filings, and are more likely to report larger number of 8-K filings and 8-K items per day in response to bad news relative to good news. Finally, we document that narrative conservatism is more (less) pronounced in firms with lower (higher) conditional conservatism, in explanatory (supplementary) narratives, in voluntary (mandatory) disclosure, and in settings where managers have more (less) incentives to disclose bad news.

Keywords: *narrative disclosure; conservatism; tone; timeliness; news-consistency; textual analysis*

*Email: fzhu@emp.uc3m.es

1 Introduction

~~Prior literature documents the existence of conditional and unconditional conservatism, which are measured by the recognized line items in financial statements.~~ In this paper, we ~~add to this prior work by~~ defining and providing evidence of narrative conservatism. We define narrative conservatism as *narratives responding to bad news in a more complete, news-consistent and timely manner than good news*. This definition builds on the work of Basu (1997), extending the notion of accounting conservatism to narratives. Narrative conservatism is of interest for at least two reasons. First, narrative disclosure takes up a dominant space in the corporate filings.[1] Investors' perceptions of firm performance and their subsequent decision-making processes are likely ~~to be~~ shaped by narrative disclosure (Li, 2010b). Therefore, understanding the properties of narrative disclosure and their economic implications is essential for market participants and regulators. Second, studying narrative conservatism complements our current understanding of accounting conservatism. If recognition is merely one of the presentation formats of financial reporting, then our extant knowledge of conditional and unconditional conservatism is a partial view of accounting conservatism. Yet, we know little about whether narrative disclosure is conservative, or whether and how narrative conservatism interacts with the other two forms of conservatism.

Prior literature distinguishes between recognition and disclosure. Recognition is the depictions in numbers on the face of the financial statements, and disclosure is commonly viewed as the display in the notes and supporting schedules that accompany financial statements (Schipper, 2007). The two forms of financial reporting are subject to different reporting requirements. The Financial Accounting Standards Board (FASB) explicitly specifies a set of recognition criteria while allowing for more flexibility in disclosure (FASB, 1984). This flexibility paves a way for the supplementary role of disclosure—disclosing information that cannot be recognized due to the failure to meet one or more of the recognition criteria. The other explanatory role of disclosure is to provide detailed background information of recognized numbers in financial statements (FASB, 1984, par. 7).

Extensive research has been conducted on conditional and unconditional conservatism, focusing on the properties of the income statement and balance sheet items respectively. Conditional conservatism captures the asymmetric response of *earnings* to positive and negative economic news, and unconditional conservatism manifests as a systematic understatement of *net book value of assets* due to predetermined aspects of the accounting process (e.g., Beaver & Ryan, 2005). However, conservatism in narrative disclosure is less studied. We interpret narrative conservatism as narratives responding to bad news in a more complete, news-consistent

[1] For example, Apple Inc.'s 2019 Annual Report contains only 3 pages of numerical summary in the financial statements and around 15 pages of other tables and figures, among a total of 64 pages. The rest of the report is devoted to narratives including risk factors, management discussion and analysis (MD&A), notes to financial statements, among other things. Also, over the past 20 years, the average number of pages in annual reports devoted to footnotes and MD&A has quadrupled (EY, 2012).

and timely manner than good news. We focus on these three properties of narratives because they correspond to the following three independent dimensions of disclosure: quantity, content and timeliness. Quantity refers to how much information is provided. Content relates to what and how information is provided via disclosure. Timeliness associates with how much time it takes to provide the information.

In theory, narrative disclosure may or may not be conservative. Prior studies outline several incentives for managers to disclose or withhold bad news (Skinner, 1994, 1997; Kothari, Shu, & Wysocki, 2009; Bao, Kim, Mian, & Su, 2019), which also influence managers' decisions on whether, and to what extent they respond to good news and bad news asymmetrically in narrative disclosure. The three major motives for managers to disclose bad news are: (a) to obtain lower financing costs resulting from reduced information asymmetry, (b) to reduce litigation risk due to the failure to disclose bad news in a timely manner and (c) to manipulate firm performance downwards prior to stock option grant. The two major motives for managers to withhold bad news are: (a) to prevent reputation loss that damages managers' future career and (b) to avoid personal wealth loss linked to performance-based compensation. In summary, given various managerial incentives, whether on average managers tend to disclose or withhold bad news relative to good news remains an empirical question.

To empirically test whether narrative disclosure is conservative, ~~we adopt the following three measurements for completeness, news-consistency and timeliness respectively.~~ We proxy disclosure completeness by the number of total words in corporate filings. Prior literature documents that managers use lengthier reports to disclose more information, which reduces information asymmetry and lowers cost of capital (Leuz & Schrand, 2009). We interpret news-consistency as deploying a positive narrative tone in response to good news and a negative narrative tone in response to bad news, and we measure the degree of news-consistency by the marginal change of narrative tone in response to good news and bad news. If narrative disclosure is conservative, the marginal change of tone in narrative disclosure should be greater in response to bad news than good news. We evaluate timeliness by the reporting time lag between news release and disclosure filing dates. The smaller the reporting time lag is, the timelier the narrative disclosure is. Overall, we posit that if narrative disclosure is conservative, then in response to bad news relative to good news, it should have more ~~number of~~ words, greater marginal change of tone and shorter reporting time lag. In terms of news measurement, we follow Basu (1997) and use stock returns as a proxy for news.

We use two types of filings required by the U.S. Securities and Exchange Commission (SEC) for all public companies—10-Q and 8-K filings—as our narrative disclosure corpora. To begin with, we retrieve 10-Q and 8-K filings from the Electronic Data Gathering, Analysis, and Retrieval system (EDGAR) from 1993 to 2020.[2] Next,

[2] Since the SEC adopted the rule of electronical submission for corporate filings in 1993, data coverage in the first year of EDGAR

we apply the financial sentiment word list developed by Loughran and Mcdonald (2011) (LM hereafter) to count the number of positive, negative, uncertainty, litigious and modal words in each corporate filing extracted from EDGAR. Finally, we construct the tone measure as the number of net positive words per thousand total words and the reporting time lag as the number of days elapsed between news release date and document reporting date. Our final 10-Q (8-K) sample consists of 91,607 (119,616) firm-quarter (firm-day) observations from 5,250 (8,261) unique firms. Our empirical results suggest that both 10-Q and 8-K filings have more number of words and greater marginal change in tone in response to bad news relative to good news, consistent with narrative disclosure being conservative. In terms of reporting time lag, we find that 8-K (10-Q) filings respond more (less) timely to bad news than good news. We argue that because 10-Qs are not as timely as 8-Ks, and because 10-Qs not only contains narrative disclosure but also financial statements, the reporting time lag of 10-Qs does not strictly proxy for narrative timeliness. Therefore, we interpret the 8-Ks results regarding narrative timeliness as evidence that narrative disclosure responds more timely to bad news relative to good news, consistent with narrative disclosure being conservative.

We perform four sets of auxiliary analyses to examine the interaction between narrative and conditional conservatism and the determinants of narrative conservatism. First, we explore the interaction between narrative and conditional conservatism. We construct a firm-quarter measure of conditional conservatism following Khan and Watts (2009) and we divide the 10-Q sample into low and high conditional conservatism subsamples. We find that firms in low conditional conservatism subsample demonstrate high narrative conservatism, consistent with managers viewing narrative conservatism and conditional conservatism as substitutes in financial reporting. Second, we study how the role of narratives affects narrative conservatism. We conjecture that supplementary narratives may be more conservative than explanatory narratives because managers have more discretion on the format and the content of the former. We choose the MD&A (notes to financial statements) section as the representative of the explanatory (supplementary) narratives and we repeat our main analysis using the textual measures constructed based on the MD&A and the note sections. We find that narratives in the MD&A section are more conservative than those in the note section, consistent with supplementary narratives being more conservative than explanatory narratives. Third, we investigate how narrative conservatism varies in voluntary and mandatory disclosure. We posit that if managers choose to be conservative in narrative disclosure voluntarily, then the voluntary disclosure should be more conservative than the mandatory disclosure, as managers have more freedom to express in terms of the content and the rhetoric in voluntary disclosure. We

implementation is low (Gao & Huang, 2020). We repeat our main analyses using data from 1994 onward, and our main results sustain.

follow He and Plumlee (2020) to measure voluntary and mandatory disclosure using 8-K filings that contain voluntary and mandatory 8-K items, and we find that voluntary disclosure is more conservative than mandatory disclosure. Fourth, we inspect how managerial incentives affect narrative conservatism in three settings where managers have strong incentives to disclose or withhold bad news. Prior studies document that when executives anticipate large stock option grants and when firms are under high litigation risk, managers have more incentive to disclose bad news (Aboody & Kasznik, 2000; Skinner, 1994, 1997). However, when firms are undergoing seasoned equity offering, managers have more incentive to withhold bad news (Teoh, Welch, & Wong, 1998). Similarly, we hypothesize and find evidence that the narrative disclosure of firms in the first two settings is more conservative, whereas that of firms in the third setting is less conservative.

Our study contributes to the accounting literature in four aspects. First, we ~~fill the gap in conservatism literature by~~ documenting the existence of narrative conservatism. Second, we add to the literature on the distinction and the interaction between recognition and disclosure (Schipper, 2007; Barth, Clinch, & Shibano, 2003; Aboody, 1996). We find that firms with low (high) conditional conservatism tend to be more (less) conservative in narratives, suggesting that managers view recognition and disclosure as substitutes to some extent. Third, we provide novel evidence to the debate regarding whether managers withhold bad news. Prior research uses a wide variety of disclosure proxies to study managers' tendency to disclose or withhold bad news (Skinner, 1994, 1997; Kothari et al., 2009; Segal & Segal, 2016; Bao et al., 2019). We use the textual properties of SEC filings as novel proxies for disclosure, and our results support the idea that firms on average disclose bad news voluntarily. Fourth, we relate to the broader literature on the informativeness of SEC filings. A stream of literature studies the market reactions to 8-Ks (Carter & Soo, 1999; Pinsker, 2006; Lerman & Livnat, 2010) and 10-K/Qs (Alford, Jones, & Zmijewski, 1994; Li, 2008, 2010a). Instead, we use the market returns as indication of good and bad news for the firms and study the behavior of corporate narrative disclosure.

The rest of the study structures as follows. Section 2 reviews prior literature on recognition, disclosure, conditional and unconditional conservatism, and develops the main hypotheses. Section 3 outlines the empirical design and data selection process. Section 4 presents the main results of 10-Q and 8-K samples. Section 5 reports auxiliary analyses and Section 6 concludes.

2 Theoretical Framework

2.1 Recognition and Disclosure

A stream of literature studies the distinctions between *recognition* and *disclosure* and their respective or combined effectiveness in financial reporting (Schipper, 2007; Barth, Clinch, & Shibano, 2003; Aboody, 1996). Schipper (2007, p. 301) defines recognition as "depictions in numbers with captions on the face of the financial statements", and disclosure as "display in the notes and supporting schedules that accompany financial statements".[3] In this study, we adopt the same notion of recognition as in Schipper (2007), and we use the terms *narratives, narrative disclosure* or *disclosure* interchangeably to denote all textual disclosures presented in SEC filings, including notes to financial statements, supplementary information and other means of financial reporting such as the MD&A section. Examples of recognition are revenue, expense, asset and liability expressed in currency units on the face of financial statements, which are also known as line items in financial statements.

Disclosure and recognition are subject to different reporting requirements. For an economic item to be recognized in financial statements, a set of recognition criteria needs to be satisfied. First, the item must meet the definition of an element of financial statements (definition criterion). Second, the item must have a relevant attribute measurable with sufficient reliability (measurability criterion). Third, the information about the item must be capable of making a difference in user decisions (relevance criterion). Fourth, the information must be representationally faithful, verifiable, and neutral (reliability criterion) (FASB, 1984). However, disclosure is more flexible because it can be deployed to disclose information that fails to meet certain recognition criteria (FASB, 1984, par. 7b).

Narrative disclosure plays an essential role in financial reporting, as FASB (1984, par. 7, CON5-7) states:

> *Although financial statements have essentially the same objectives as financial reporting, some useful information is better provided by financial statements and some is better provided, or can only be provided, by notes to financial statements or by supplementary information or other means of financial reporting.*

Concretely, narrative disclosure has two fundamental functions. First, narratives can be supplementary to recognition, conveying information about corporate events that cannot be recognized due to the inability to meet one or more of the four recognition criteria. In terms of good news, because the good news requires higher verification in recognition, firms may convey good news via disclosure rather than recognition. For instance,

[3] Statement of Financial Accounting Concepts No. 5—*Recognition and Measurement in Financial Statements of Business Enterprises* formally defines *recognition* as "the process of formally recording or incorporating an item into the financial statements of an entity as an asset, liability, revenue, expense, or the like. Recognition includes depiction of an item in both words and numbers, with the amount included in the totals of the financial statements" (FASB, 1984, par. 6), but does not define *disclosure*. Due to the absence of a conceptual definition of disclosure, prior literature on disclosure commonly interpret disclosure as any display that is not in numbers. However, this interpretation may partially overlap with the FASB definition of recognition, which states that recognition also includes words. As Schipper (2007, p. 302) notes: "...both in analytical modeling and in developing financial reporting concepts, it is difficult to distinguish between recognized and disclosed information".

under U.S. General Accepted Accounting Principle (GAAP), long-lived tangible and intangible assets cannot be revaluated upwards. So when the market price of the firms' long-lived tangible and intangible assets goes up, the firms cannot recognize the gain in balance sheet, but they may discuss the price movement in SEC filings. In terms of bad news, despite that the bad news already requires lower verification than good news, it may still not be fully recognized. For example, although firms could create a provision for the expected payments that results from a potential lawsuit in the future, they cannot recognize the associated reputation losses since it is extremely difficult to obtain a reliable estimate that can be verified subsequently. However, firms may discuss the likelihood and the expected impact of entering into a lawsuit in the risk factors or the MD&A section of the SEC filings. Another example is that internally developed intangible assets cannot be capitalized in the balance sheet, so they cannot be impaired when bad news arrives. However, firms may discuss the impact of news associated with these intangible assets in SEC filings. In sum, firms may use narrative disclosure to inform investors about the immeasurable, and thus irrecognizable impact of various corporate events and fulfill their obligation of providing relevant financial information to investors. Second, narratives can be explanatory to recognition, explaining the line items in financial statements. FASB (1984, footnote 4, CON5-7) gives several examples on the explanatory role of notes to financial statements:

> *For example, notes provide essential descriptive information for long-term obligations, including when amounts are due, what interest they bear, and whether important restrictions are imposed by related covenants. For inventory, the notes provide information about the measurement method used—FIFO cost, LIFO cost, current market value, etc. For an estimated litigation liability, an extended discussion of the circumstances, counsel's opinions, and the basis for management's judgment may all be provided in the notes. For sales, useful information about revenue recognition policies may appear only in the notes (FASB Statement No. 47, Disclosure of Long-Term Obligations; ARB No. 43, Chapter 4, "Inventory Pricing", statement 8; FASB Statement No. 5, Accounting for Contingencies, par. 10; and APB Statement 4, par. 199).*

2.2 ~~Conditional, Unconditional and~~ Narrative Conservatism: Definition

Extant literature studies accounting conservatism in two forms: conditional and unconditional conservatism (Beaver & Ryan, 2005). Conditional conservatism manifests as "accountants' tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses" (Basu, 1997, p. 7),[4] and is typically measured by the asymmetric response of earnings to positive and negative stock returns. Examples of conditional conservatism include allowing for *impairment*, i.e., writing down by the amount of loss incurred, but not *revaluation*, i.e., writing up by the difference between market price and carrying amount, for long-lived tangible and intangible assets under U.S. GAAP, and lower of cost or market accounting (LCM) for inventory under U.S. GAAP or lower of cost or net realizable value accounting (LCNRV) under International

[4] Basu (1997) does not use the terms conditional or unconditional conservatism. Here we quote Basu (1997) only to describe the manifestation of the two forms of conservatism, which are now labeled as conditional and unconditional conservatism.

Financial Reporting Standards (IFRS). Unconditional conservatism manifests as "accountants' preference for accounting methods that lead to lower reported values for shareholders' equity" (Basu, 1997, p. 8). Examples of unconditional conservatism include immediate expensing, rather than capitalizing, of research and development (R&D hereafter) costs, and the use of accelerated depreciation for property, plant and equipment (Beaver & Ryan, 2005). The measurements of the two types of conservatism—earnings and shareholders' equity, are both recognized line items in financial statements.

Comparing to the extensive research on conditional and unconditional conservatism, little is known about conservatism in narratives. We define narrative conservatism as *narratives responding to bad news in a more complete, news-consistent and timely manner than good news*. We focus on these three properties of narratives because they correspond to the following three independent dimensions of disclosure: quantity, content and timeliness. Quantity refers to how much disclosure is provided, and we interpret completeness as firms providing more disclosure. Content relates to what and how information is provided via disclosure, and we interpret news-consistency as firms using positive tone in response to good news and negative tone in response to bad news in narrative disclosure. Timeliness associates with how much time it takes to provide the disclosure, and we interpret timely disclosure as information issued after a short period of time since the realization of the underlying event. Each firm can be conservative or not independently along each dimension. In this study, we assess the overall level of narrative conservatism along each dimension independently for our sample firms during the sample period.

In theory, whether narrative conservatism exists is not clear. Narrative conservatism requires firms to disclose bad news in a more complete, news-consistent and timely manner than good news. However, managers may or may not disclose bad news when facing different incentives. On the one hand, managers may disclose bad news for three motives. First, managers may disclose more complete information, including bad news, to reduce financing costs. Extant theoretical work establishes that complete disclosure reduces information asymmetry and lowers cost of capital (e.g., Diamond & Verrecchia, 1991; Baiman & Verrecchia, 1996). Leuz and Verrecchia (2000) show that after German firms switched from the German reporting regime to an international reporting regime which requires an increased level of disclosure, their information asymmetry is reduced leading to lower cost of capital. Leuz and Schrand (2009) find that firms respond to the adverse shock created by the Enron scandal by increasing the length of disclosures in 10-K filings, which reduces firms' cost of capital subsequently. Second, litigation pressure induces managers to disclose bad news more promptly than good news (Skinner, 1994; Kasznik & Lev, 1995; Skinner, 1997). Financial information users have greater incentives to sue the manager when bad news is not disclosed than when good news is not disclosed. This asymmetric litigation

pressure potentially stems from users' asymmetric preference for unexpected gains and losses. Therefore, firms may predisclose bad news to avoid being sued or to minimize the costs of resolving the litigation that inevitably follows the disclosure of bad news. Third, the personal career and compensation incentives also play a role in managers' decisions to disclose bad news. Skinner (1994) argues that managers may face reputational costs if they fail to disclose bad news. Yermack (1997) and Aboody and Kasznik (2000) document that managers release bad news immediately prior to stock option grant dates to lower the option strike price. On the other hand, managers may withhold bad news for at least two reasons. First, managers may avoid disclosing bad news for career concerns, in expectation to bury bad news with subsequent corporate events. Significant bad news affects managerial career negatively by deterring promotion, limiting employment opportunity in the outside job market and potentially leading to termination. Second, performance-based managerial compensation also demotivates managers to disclose bad news. Bad news disclosure may lead to bonus shrink and stock price decline, reducing managers' personal wealth especially when they are compensated with shares or options (Kothari et al., 2009). In sum, while managers have a natural tendency to disclose good news, they face different incentives when it comes to the decision of disclosing or withholding bad news. Given the various managerial incentives, whether narratives on average responds to bad news in a more complete, news-consistent and timely manner than good news remains an empirical question.

To investigate this question, we construct three measurements for disclosure completeness, news-consistency and timeliness. We measure disclosure completeness by the total number of words of SEC filings. The Conceptual Framework requires complete disclosures to include "...all information necessary for a user to understand the phenomenon being depicted, including all necessary descriptions and explanations" (FASB, 2018, QC12). Hence, more complete disclosure should be lengthier, which allows managers to elaborate on detailed explanations of firm performance (Leuz & Schrand, 2009).[5] However, we are aware of a strand of literature suggesting that narrative disclosure is less informative when it is less readable (Li, 2008; Lo, Ramos, & Rogo, 2017; Loughran & Mcdonald, 2014), and because lengthier document is often less readable, it may appear counter-intuitive to proxy completeness with the document length. We provide two explanations for this measurement. First, some studies point out that instead of managers' intentional obfuscation, lower readability may result from the fact that bad news is inherently more complex and therefore needs more explanations (Bloomfield, 2008), and that there is incremental information content embedded in complex narratives (Bushee, Gow, & Taylor, 2018).

[5] We use number of words instead of number of pages, which is used in Leuz and Schrand (2009), as the proxy for disclosure completeness for two reasons. First, for pure texts, these two measures are almost equivalent, or at least are monotonic transformations of each other, given a roughly constant number of words per page. Second, for financial reports with graphs and tables, the number of words is a more precise measure for narrative disclosure, because it counts the length of narratives only. However, the number of pages may be enlarged mechanically by graphs, tables, and even space lines embedded in the tables, which are not the focus of this study.

Therefore, lower readability does not necessarily imply lower narrative disclosure quality. Second, although somewhat correlated, the document length and the readability are essentially two different constructs. In a binary classification context, texts can be long or short, readable or irreadable independently. Specifically in measuring information completeness, the document length is an appropriate construct because "including all necessary descriptions and explanations" (FASB, 2018, QC12) in narrative disclosure will inevitably increases the document length. Thus, if narrative disclosure is conservative, we expect it to be lengthier, i.e., contains more number of words, in response to bad news. We formulate our first hypothesis as follows:

H1: The total number of words in narrative disclosure is greater in response to bad news than good news.

We proxy the sentiment spectrum in narrative disclosure by linguistic tone and measure the degree of news-consistency by the marginal change of tone in response to unit increase (good news) or decrease (bad news) in stock market returns. News-consistency requires the marginal change to be positive, so that the positive tone responds to good news and the negative tone to bad news. Furthermore, if the narrative tone is more consistent for bad news, it implies greater marginal change of tone in response to bad news than good news. That is, the change in narrative tone should be more negative in response to bad news than it should be positive in response to good news, given the same magnitude of news impact. Narrative conservatism creates a downward bias in narrative disclosure conditional on the nature of news: either bad news is emphasized or good news is attenuated, or both.[6] Thus, we formulate our second hypothesis as follows:

H2: The marginal change of tone in narrative disclosure is greater in response to bad news than good news.

We measure timeliness by the reporting time lag, defined as the number of days elapsed between the news release date and the filing date of the narrative disclosure. In line with the interpretation of timeliness in the Conceptual Framework that "Timeliness means having information available to decision makers *in time* to be capable of influencing their decisions" (FASB, 2018, QC29, emphasis added), the shorter is the reporting time lag, the timelier is the narrative disclosure. If narrative disclosure is conservative, we expect it to be timelier, i.e., has shorter reporting time lag, in response to bad news. Thus, we formulate our third hypothesis as follows:

H3: The reporting time lag of narrative disclosure is shorter in response to bad news than good news.

[6] We provide the following numerical example to illustrate the concept of marginal change of tone. Suppose that there is 1% increase (good news) and 1% decrease (bad news) in stock return, which should move tone upwards and downwards by 1% in theory if the response of narrative tone is neutral, i.e., tone equally responding to good and bad news. However, in the presence of narrative conservatism, three situations may happen: (1) bad news emphasis: in response to bad news, tone decrease by 1.2% and in response to good news, tone increase by 1%; (2) good news attenuation: in response to bad news, tone decrease by 1% and in response to good news, tone increase by 0.8%; (3) a mix of both: in response to bad news, tone decrease by 1.2% and in response to good news, tone increase by 0.8%. In all cases, the marginal change of tone in response to bad news is greater in magnitude than that in response to good news. Therefore, under narrative conservatism, the marginal change of tone in narrative disclosure is greater in response to bad news than good news.

3 Research Design

3.1 Narrative Disclosure Corpora and News Proxy

In this paper, we study narrative disclosure using 10-Q and 8-K filings from EDGAR database as our corpora. The form 10-Q is a comprehensive report that depicts quarterly firm performance, and it must be filed by all public companies to the SEC within 40 (for accelerated filers) or 45 days (for all other registrants) after fiscal quarter-end, according to Section 13 or 15(d) of the Securities Exchange Act of 1934. The form 8-K is a report that all public firms must file to the SEC to notify investors about material events or changes in the company, where each type of event is classified as an *8-K item*. Appendix D provides a full list of 8-K items. The 8-K items are listed in two distinct formats before and after August 23 of 2004 because on that date the SEC adopted an 8-K reform, which made three amendments to prior 8-K guidance: expanding the scope of the events subject to Form 8-K disclosure, creating a new topical format, and shortening the filing deadline (SEC, 2004; Lerman & Livnat, 2010). All 8-K items except the Other Events, the Regulation FD Disclosure and the Results of Operations and Financial Condition are mandatory items.[7] For mandatory items, the 8-K filings must be filed upon the occurrence of any one or more events pertaining to the mandatory 8-K items within a specific filing deadline. The filing deadline for mandatory items ranged from five to fifteen days after the occurrence of the event in the late 1980s, and was shortened to four business days following the occurrence of the event after August 23 of 2004 (Lerman & Livnat, 2010).

Firms can issue narrative disclosure via multiple channels, such as social media and press, conference calls and annual reports etc. We focus on the 10-Q and 8-K filings in this study for three motives. First, the 10-Q and 8-K filings are both firm-issued filings that are required for all public companies. Their contents are under SEC scrutiny and biased reporting increases litigation risk (Rogers, Van Buskirk, & Zechman, 2011). Therefore, 10-Q and 8-K filings provide higher credibility comparing to -issued disclosures via social media and press. Second, the 10-Q and 8-K filings are highly scripted and have higher reporting threshold comparing to conference calls, meaning that corporate events need to have a moderate impact on firm operations in order to be discussed in the 10-Q and 8-K filings (Hassan, Hollander, van Lent, & Tahoun, 2019). Hence, we filter out less relevant events and concentrate on the ones with material impact by using 10-Q and 8-K reports. Third, the 10-Q and 8-K filings are timelier than the 10-K filings, i.e., annual reports. Using the 10-K filings, managers can only bundle information acquired during the whole fiscal year and make summarized responses to all events

[7] We follow He and Plumlee (2020) and classify the Results of Operations and Financial Condition and the Regulation FD Disclosure as voluntary disclosure items, because the triggering event of these two items is the firm's voluntary disclosure of material events. Lerman and Livnat (2010) classify the two items as "semi-voluntary" based on the same reason. The Other Events is voluntary following the filing requirement in SEC (2004).

in one single report at year-end. Given that one of our goals is to examine the timeliness of narrative disclosure, the 10-K filings cannot provide sufficient time variation in good and bad news responses, and thus they are not appropriate text source for the purpose of this study.

There is heterogeneity between 10-Qs and 8-Ks as well. First, the 10-Qs provide more variation and diversity than 8-Ks in terms of content. The 10-Qs contain sections such as notes to financial statements and MD&A, where managers can discuss the economic implications of significant corporate events and issue forward-looking statements, whereas the 8-Ks only offer event descriptions in a relatively standardized format. Moreover, the 8-Ks are shorter, i.e. contain fewer words than the 10-Qs on average. These features imply that the 10-Qs are more flexible in content, in the sense that managers have more discretion on what and how to disclose in the 10-Qs, which provides us with more variation in linguistic tone than 8-K filings. Thus, our analyses and conclusions regarding linguistic tone are mainly conducted on and drawn upon the 10-Q sample.

Second, the 10-Qs are not as timely as the 8-Ks. The 10-Qs are filed only once every quarter, so regardless of managerial reporting incentive, the 10-Qs cannot be as timely as the 8-Ks in responding to unexpected corporate events, especially for those events that happen during early days in a fiscal quarter. This is testified by the following excerpt extracted from SEC's announcement of the 8-K reform in 2004:

> *Under the previous Form 8-K regime, companies were required to report very few significant corporate events. The limited number of Form 8-K disclosure items permitted a public company to delay disclosure of many significant events until the due date for its next periodic report. During such a delay, the market was unable to assimilate such undisclosed information into the value of a company's securities. The revisions that we adopt today will benefit markets by increasing the number of unquestionably or presumptively material events that must be disclosed currently. They will also provide investors with better and more timely disclosure of important corporate events.*
>
> (Final Rule: Additional Form 8-K Disclosure Requirements and Acceleration of Filing Date, SEC, 2004)

Furthermore, besides narrative disclosure, the 10-Qs also contain quarterly financial statements, so the reporting time lag of the 10-Qs does not strictly measure the timeliness of narrative disclosure solely, but the timeliness of recognition and disclosure in aggregation. Considering these features, our analyses and conclusions regarding timeliness are mainly conducted on and drawn upon the 8-K sample.

Following Basu (1997), we measure good and bad news with stock returns. In efficient market, stock returns incorporate public and private information in a timely manner and therefore the positive and negative returns are indicative of good and bad news of firms. Firms respond to the news by disclosing detailed information of the events that cause changes in stock returns via the 10-Q or 8-K filings.

3.2 Model Specification

3.2.1 Form 10-Q

The 10-Q filings are quarterly reports that are filed to SEC within 40 or 45 days after fiscal quarter-end. Given their stable periodicity, we design the following model to explore how the 10-Q filings respond to good versus bad news.

$$TEX_{i,t} = \beta_0 + \beta_1 QRET_{i,t} + \beta_2 NEG_{i,t} + \beta_3 QRET_{i,t} \times NEG_{i,t} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (1)$$

In Equation (1), QRET denotes the quarterly market-adjusted stock returns. NEG is an indicator for bad news, which is set to 1 if QRET is negative and 0 otherwise. CONTROLS represents a vector of control variables, which includes firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). Detailed variable definitions are provided in Appendix B and Appendix C. We control for these three firm characteristics to alleviate the omitted variable bias, as these three factors can affect stock returns and firm narrative disclosure simultaneously (Li, 2010a; Huang, Teoh, & Zhang, 2014). Notice that the right-hand side of Equation (1) resembles the conditional conservatism model in Basu (1997). Our model differs from the Basu model in replacing earnings with three textual variables to examine the responses of narrative disclosure to positive versus negative market returns. Specifically, TEX represents a vector of textual properties that consists of number of words (NW), tone (TONE) and reporting time lag (TLAG). NW is calculated as the natural logarithm of one plus the count of total words. TONE is defined as number of net positive words per thousand total words, and is calculated as total number of positive words minus the sum of total number of negative words and total number of negations, and multiply the previous result by one thousand for the ease of interpretation. We follow LM and count negations as cases where negation words[8] occur within four or fewer words from a positive word. By taking negations of positive words into consideration in calculating tone, we control for the fact that it is common for firms to frame bad news using negated positive words, i.e., use "did not increase" instead of "decrease". We do not control for negations of negative words because firms rarely communicate good news with negated negative words, i.e, use "did not fail" instead of "succeeded". TLAG is defined as number of days elapsed between the fiscal quarter-end and 10-Q filing date in EDGAR. One concern of the TLAG measurement for reporting timeliness is that the length of reporting time lag may not be fully controlled by managers, and thus cannot accurately capture the discretionary reporting timeliness of firms. Prior auditing literature suggests that a set of auditor characteristics contributes to unexpected audit report lag (Knechel & Payne, 2001; Bamber,

[8] Negation words include: no, not, none, neither, never, nobody (Tottie, 1991).

Bamber, & Schoderbek, 1993), which consequently leads to filing delay in audited financial reports. However, because audit for quarterly filings is not mandated by law, and due to the high auditing cost, most 10-Q filings are not audited.

The coefficient of interest in Equation (1) is β_3, which we interpret as the difference in responsiveness of textual properties to good versus bad news. If 10-Q narrative disclosure is conservative, we expect it to have greater number of words, greater marginal change of tone and shorter reporting time lag in response to bad news relative to good news. In the case of NW being the dependent variable, β_3^{NW} should be negative under H1. Because QRET is always negative when NEG equals 1, the interaction term $\beta_3^{NW} QRET_{i,t} \times NEG_{i,t}$ is positive only when β_3^{NW} is negative, which translate into greater number of words. Following the same logic, β_3^{TLAG} of TLAG regression should be positive under H3, which translates into shorter reporting time lag. The interpretation of β_3^{TONE} is different from those of the previous two models, in the sense that β_3^{TONE} represents the difference in marginal change of tone in response to good versus bad news. An incremental marginal change of tone in response to bad news relative to good news is reflected as positive β_3^{TONE}.

Additionally, we construct an abnormal tone measure (ABTONE) following the expected tone model in Huang et al. (2014). ABTONE is calculated as the residual of the following model:[9]

$$\begin{aligned} TONE_{i,t} = {} & \beta_0 + \beta_1 EARN_{i,t} + \beta_2 RET_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 MTB_{i,t} + \beta_5 STD\_EARN_{i,t} \\ & + \beta_6 STD\_RET_{i,t} + \beta_7 AGE_{i,t} + \beta_8 BUSSEG_{i,t} + \beta_9 GEOSEG_{i,t} + \beta_{10} LOSS_{i,t} \\ & + \beta_{11} \Delta EARN_{i,t} + \beta_{12} AFE_{i,t} + \beta_{13} AF_{i,t} + \epsilon_{i,t} \end{aligned} \tag{2}$$

Where TONE is the number of net positive words per thousand total words. As residuals of Equation (2), ABTONE captures the portion in tone that is orthogonal to firm fundamentals such as business complexity, growth opportunities and risk, and represents the portion of tone subject to managerial discretion. Our results of the expected tone model is consistent with Huang et al. (2014).[10] Finally, we measure the readability of 10-Qs using the Gunning fog index following Li (2008). The fog index is positively correlated with the average number of words per sentence and the percentage of complex words in a document. The higher the index is, the less readable the document is.

[9] Our expected tone model differs from Huang et al. (2014) in replacing book-to-market ratio with market-to-book ratio.
[10] See results comparison for expected tone model in Table 1 of Online Appendix.

3.2.2 Form 8-K

Due to the irregularity and unpredictability of the 8-K triggering events, the 8-K filings in EDGAR database have a unique data structure: though most companies only report one 8-K filing in one day and each 8-K filing usually contains only one or two 8-K items, some firms report more than one 8-K filings per day and each 8-K filing may contain more than two items. So we construct 8-K sample in three steps. First, as we want to analyze the responsiveness of 8-K filings to good and bad news, and our news proxy—daily stock return—is measured at firm-day level, we aggregate the raw 8-K data at individual filing level into 8-K data at firm-day level by summing up all raw count variables over each firm-day. For instance, the count variable $nw_{i,t}$ in 8-K dataset stands for number of total words in all 8-K filings reported in day t for firm i, instead of number of total words of one specific 8-K. To keep track of the unique data structure of 8-K filings, we further construct two new variables—N8K and NITEM, which are defined as number of 8-K filings in one reporting period date and number of 8-K items in one reporting period date, respectively. We label a firm-day as "8-K day" if at least one 8-K's reporting period date coincides with that day.

Next, we build our proxy for news under 8-K context. We obtain the daily market-adjusted stock returns (DRET) and calculate the change in daily returns (ΔDRET). Then, we define a firm-day as a "bad (good) news day" if the negative (positive) change in daily market-adjusted stock return (ΔDRET) is three times larger than the firm's average decrease (increase) in daily return over the calendar year. BN is an indicator for bad news day, which is set to 1 if the firm-day is a bad news day, and 0 if the firm-day is a good news day.[11] Notice that we define good and bad news differently under 8-K and 10-Q context. This is because that the daily returns are more volatile than quarterly returns and the sign of daily returns can change constantly merely due to trading noises. Therefore, we only focus on firm-days with sizable changes in daily returns, i.e., changes that are three times larger than the annual average change, which is more likely to result from significant corporate events and reflect fundamental firm information.

Then, we conduct a matching process as illustrated in Figure 1. The idea of matching is to pair the firms' news releases and 8-K filings. Specifically, we match every 8-K day to its nearest news day. The matched news day can be earlier than (Match-1), the same as (Match-2) or later than (Match-3) the 8-K day. After matching, we calculate TLAG of 8-K sample as the number of days elapsed between the 8-K filing date and its nearest news day.[12] We eliminate all Match-3 cases in which the market return movements occur after the filing of

[11] We code BN to missing if the firm-day does not have any news. Therefore, all observations in our final 8-K sample are either good or bad news firm-days.

[12] All filings in EDGAR have two dates: filing date and reporting period date. Filing date is the date when the report is filed to EDGAR, and reporting period date is the end date of reporting period of the filing, as defined by the SEC (https://www.sec.gov/about/webmaster-faq.htm). We match 8-Ks to news by *reporting period date* because the reporting period date and the news release date are both about the actual date when the underlying event takes place. However, we calculate TLAG

8-Ks, because for this type of match we cannot accurately identify the date when the underlying event actually occurs.[13] Our final 8-K sample consists of Match-1 and Match-2 with non-negative TLAG.

The underlying assumption behind this matching process is that the 8-K filing and its nearest news release are triggered by the same underlying event. One concern of this assumption is that the 8-K filing and the news release may not be about the same event even if they are close in time. We provide two validity checks for this assumption from different aspects. As a first check, we construct a *restricted 8-K sample* by limiting the full 8-K sample to observations with reporting time lag less than or equal to four (five) calendar days for observations with reporting period date after (before) August 23 of 2004 (TLAG = 0, 1, 2, 3, 4, 5). Because firms must file required 8-Ks within four (five) business days of a triggering event after (before) August 23 of 2004 (SEC, 2004), 8-K filings reported within four (five) days of the news release date are more likely to be related to the precedent news, as is regulated by the SEC rule. Our restricted sample selection criterion is more restrictive than the SEC rule for three reasons. First, while the regulation requires firms to file 8-K within four (five) business days of a triggering event, we reduce this reporting deadline to four (five) calendar days, which is always shorter or at most equal to four (five) business days. Second, the regulation exempts the voluntary disclosure items from the four (five) business day reporting deadline (He & Plumlee, 2020), but we still apply this reporting deadline to these items. Third, prior to the 8-K reform, 8-Ks must be filed within five to fifteen days depending on the nature of the event occurred, but we uniformly apply the five days deadline to all items before the reform. This more stringent sample selection criterion further ensures that 8-K filings in our restricted sample are indeed responding to the precedent news. Our main results of 8-K hold using both the full and restricted 8-K samples. As a second check, we conduct a manual audit for 20 matched 8-K cases, and the results support the matching assumption that the 8-Ks are responses to their matched news releases. See Appendix E for details of the manual audit process.

Once the 8-K sample is constructed, we design the following model to explore how 8-K filings respond to good versus bad news.

$$TEX_{i,t} = \beta_0 + \beta_1 \Delta DRET_{i,t-tlag} + \beta_2 BN_{i,t-tlag} + \beta_3 \Delta DRET_{i,t-tlag} \times BN_{i,t-tlag} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (3)$$

Where ΔDRET and BN are changes in daily returns and bad news indicator *at news release date*. We deploy

using 8-K *filing date* because we are interested in whether 8-Ks are filed in response to good and bad news with different timeliness, allowing for managerial discretion in reporting speed.

[13] We do not use the lag between the 8-K reporting period date and the 8-K filing date to measure reporting time lag because of two reasons. First, the reporting period date is the latest possible date, but not necessarily the exact date at which the underlying event occurs. Second, this reporting period date is self-reported by managers. Managers may have incentives to prolong or shorten the lag, which creates endogeneity concerns (Chapman, Reiter, White, & Williams, 2019).

ΔDRET rather than DRET in this model because under 8-K context, the bad news indicator BN is defined based on ΔDRET instead of DRET. In Equation (3), CONTROLS denotes a vector of control variables at 8-K *filing date*,[14] which includes firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). We control for these three fundamental characteristics that may affect firms reporting policy to address the omitted variable bias. TEX represents a vector of textual properties that consists of number of words (NW), tone (TONE) and reporting time lag (TLAG). The coefficient of interest in Equation 3 is still β_3, and its interpretation is the same as that in the context of 10-Q. If 8-K narrative disclosure is conservative, we expect it to have greater number of words, greater marginal change of tone and shorter reporting time lag in response to bad news relative to good news, which manifests as negative β_3^{NW}, positive β_3^{TONE} and positive β_3^{TLAG}.

3.3 Data

We obtain historical financial and segment data from Compustat, stock returns from the Center for Research in Security Prices (CRSP) and analyst earnings forecasts data from I/B/E/S. We retrieve 10-Q and 8-K data from EDGAR through a self-developed Python program (see Appendix A for detailed description of EDGAR data collection process). Table 1 illustrates the sample selection process of 10-Q and 8-K filings. First, we successfully parsed and retrieved 575,579 (1,489,626) unique 10-Q (8-K) filings out of 594,017 (1,628,467) existing filings in EDGAR from 1993-Q1 to 2020-Q1. Next, we merge 10-Q and 8-K dataset with other datasets of firm characteristics and market performance. Finally, we screen the merged 10-Q and 8-K dataset according to the following criteria. We eliminate observations with missing value in key accounting and financial variables or with beginning-of-quarter stock prices below $1. In 10-Q sample, we further delete observations with missing values in analyst coverage variables. We exclude financial (SIC code between 6000 and 6999) and utility (SIC code between 4900 and 4999) firms because the accounting policy for the former is different from that of other industries, and they are both highly regulated industries which are incomparable to other industries in general. Observations (a) with non-positive total assets or book value of equity or common shares outstanding, or (b) with negative or above 99% percentile reporting time lag,[15] or (c) with below 1% percentile total number of words are dropped. The Gunning fog index is winsorized at 1% and 99% level. In 8-K sample, we further delete observations that are matched to news days that immediately follow another news day, because such news days

[14] Because our measures of firm fundamentals are calculated based on Compustat quarterly data, the variation in firm fundamental measures is very small (if any) either we control for them at news release date (t-tlag) or at 8-K filing date (t), as the average reporting time lag of 8-K is only 15 days.

[15] Before truncation, the average reporting time lag for 10-Q is 40 days, but the maximum lag is 4,069 days, which is filed by CPI Corp in 2007-06-21 to report a quarterly result as of 1996-04-27 (see https://www.sec.gov/Archives/edgar/containers/fix041/25354/0001140361-07-012753.txt). We read some of the 10-Q filings with such extremely long reporting lag but do not find an explanation for the unusual delay. In theory 10-Q filings should be filed within 40 or 45 days after fiscal quarter-end, so it remains a puzzle as to why in practice there exists a few accepted filings with such a big delay in EDGAR database. For the purpose of this study we eliminate observations with unusual delay. We also truncate TLAG at 99% percentile in 8-K sample.

may merely reflect the reversal in market returns after a dramatic change in the previous day. All financial variables except returns are winsorized at 1% and 99% level to minimize the impact of outliers. Our final 10-Q sample contains 91,607 firm-quarter observations which constitutes of observations from 5,250 unique firms from 1993 to 2016. Our final 8-K sample contains 119,616 firm-day observations which constitutes of observations from 8,261 unique firms from 1993 to 2020. On average, each firm in 8-K sample has two significant news days in a year. Sample size can vary across different model specifications and is noted in each table.

4 Main Results

4.1 Summary Statistics

Table 2 Panel A presents summary statistics for key variables in 10-Q sample. The summary statistics of the raw word count for positive, negative, uncertainty, litigation and modal words in 10-Q narratives (untabulated) are consistent with the LM 10-Q dataset.[16] On average, each 10-Q filing contains 10,937 words, with considerable variation across filings. TONE is negative in general and we propose two possible explanations for this. First, the LM sentiment word list contains more negative (2,355) than positive (354) words by construction, so the likelihood of words being classified as negative is higher than that of positive words. Second, since optimistic language increases litigation risk (Rogers et al., 2011; Cazier, Merkley, & Treu, 2020), firms may avoid positive words in 10-Q filings to reduce litigation risk. On average, the 10-Q filings are filed 39 days after fiscal quarter-end, which is one day before the filing deadline for accelerated filers. Moreover, 75% of the 10-Q filings are filed within 44 days after fiscal quarter-end, which is one day before the filing deadline for all other filers. This shows that firms do have discretion in reporting timeliness. ABTONE is normally distributed around zero by construction, and its quantiles are consistent with Huang et al. (2014). The mean of READ is 38, which is higher than the average fog readability score for 10-K in Li (2008), and this is mainly due to some extremely high values even after winsorizing at 99% level. The median of READ is consistent with Li (2008). Since all financial variables but the QRET are winsorized, QRET contains some extremely high and low values. Our main results of 10-Q sustain if we winsorize QRET.

Table 2 Panel B presents summary statistics for key variables in 8-K sample. 8-K filings are more neutral in terms of tone comparing to 10-Q filings, with average TONE being almost zero. Also, 8-K filings are more timely responses to news releases, with average TLAG being 15 days, which is 24 days sooner than average 10-Q filings. In more than 75% of our 8-K firm-day observations, there is only one reported 8-K filing per day,

[16] Bill McDonald and Tim Loughran created a dataset containing summary data for each individual 10-X (e.g., 10-K, 10-K/A, 10-Q405, etc.) filing, available at https://sraf.nd.edu/textual-analysis/resources/#LM_10X_Summaries.

and the maximum number of 8-K filings a firm has reported in one day is four. On average, all reported 8-Ks in one day contains 1,339 words in total, which is significantly less than the number of words per 10-Q. Firms report two 8-K items per day on average, with the maximum number being sixteen. Figure 2 illustrates the 8-K item distribution before (left) and after (right) August 23 of 2004. Each share of pie chart shows the percentage of corporate events reported under each 8-K items. The most commonly reported 8-K items before reform are Item 7: financial statements and exhibits (34.0%), Item 5: other events (27.8%) and Item 2: acquisition or disposition of assets (12.7%), whereas after reform the most frequent ones are Item 9.01: financial statements and exhibits (37.5%), Item 2.02: results of operations and financial condition (18.2%) and Item 8.01: other events (9.5%). Voluntary disclosure, which consists of the Item Results of Operations and Financial Condition, the Item Regulation FD Disclosure and the Item Other Events, makes up for 38.7% (35.7%) of total 8-K items before (after) the 8-K reform. These statistics are consistent with He and Plumlee (2020) and indicate that firms indeed use voluntary 8-K filings to report events that are not explicitly required but the firms consider important to the public. Regarding the financial variables, all but the DRET and the ΔDRET are winsorized, so these two variables contain some extremely high and low values. Our main results of 8-K sustain if we winsorize DRET and ΔDRET.

Panel C and Panel D of Table 2 present correlation matrix of key variables in 10-Q and 8-K sample, respectively. In Panel C, the correlations between ABTONE and other financial variables are close to zero, which verifies that ABTONE captures the portion of discretionary tone that is orthogonal to firm fundamentals. READ is negatively correlated with NW, suggesting that lengthier 10-Qs are actually more readable, potentially because firms try to break down abstruse concepts into more sentences and more simple words, leading to increases in document length but decreases in number of words per sentence and percentage of complex words.

4.2 Is 10-Q narrative disclosure more responsive to bad news than good news?

Table 3 Panel A presents the regression result of Equation 1. Column 2, 4 and 6 include firm and time fixed effects to control for unobservable firm characteristics or time trends that may bias our estimation. Furthermore, given that reporting policy of firms within a same industry may be similar, which may lead to high correlations among observations in textual variables such as NW, TLAG and TONE, we cluster standard errors in Column 2, 4 and 6 at 4-digit SIC code industry level to correct the potential existence of serial correlation in dependent variables (Petersen, 2009). Our clustering approach yields 375 clusters in 10-Q sample (approximately 244 observations per cluster on average). As predicted by H1, the coefficient of QRET$\times$NEG is significantly negative for NW, consistent with 10-Q narratives being lengthier in response to bad news comparing to good news. Also,

consistent with H2, the coefficient of QRET×NEG is significantly positive for TONE, which suggests that the tone of 10-Q narratives are more news-consistent in response to bad news comparing to good news. However, in contrast to H3, the coefficient of QRET×NEG is significantly negative for TLAG, which suggests that 10-Q reporting time lag is longer in response to bad news comparing to good news—that is, 10-Q filings respond to bad news in a less timely manner than good news. This delay in bad news response may appear because firms invest more resource and time on preparing the 10-Q filings to analyze and explain the causes of bad news. Due to the limitations discussed in Section 3.1 about proxying timeliness of narrative disclosure with 10-Q reporting time lag, we interpret the TLAG result obtained in 10-Q sample only as supplemental evidence on timeliness of narrative disclosure.

In addition to the main hypotheses, we study whether firms use different tone management strategy to influence investors' perception in response to good versus bad news. We replace the dependent variable in Equation (1) with the abnormal tone (ABTONE) proposed by Huang et al. (2014), and reestimate the model. ABTONE measures the discretionary portion of tone that is uncorrelated with firm fundamentals such as business complexity, growth opportunities and risk. Positive (negative) ABTONE indicates that the tone of 10-Q filing is more positive (negative) than it should be conditional on firm fundamentals. In this model, the coefficient of QRET can be positive only when the signs of returns (QRET) and abnormal tone (ABTONE) agree, meaning that managers deploy more positive (negative) tone than they should in 10-Q filings in response to good (bad) news. Vice versa, negative coefficient of QRET suggests that firms deploy more positive (negative) tone than they should in 10-Q filings in response to bad (good) news. The two phenomena are different forms of tone management, and we label the former with positive coefficient of QRET as *tone emphasis* and the latter with negative coefficient of QRET as *tone attenuation*. If none of the two types of tone management is present in 10-Q filings for good news, then the coefficient of QRET should not be significantly different from zero. The coefficient of interest is the coefficient of QRET×NEG, which represents the incremental tone emphasis or attenuation in response to bad news relative to good news, depending on the sign of the coefficient. If narrative disclosure is conservative, we expect incremental tone emphasis for bad news, translating into a positive coefficient of QRET×NEG. One key research design issue in estimating the ABTONE model is that the dependent variable ABTONE is calculated as residuals from Equation 2. As Chen, Hribar, and Melessa (2018) has pointed out, using residuals as dependent variables may lead to incorrect inferences, so we apply the following two remedies as suggested by the authors. First, we include all regressors in Equation 2 as control variables in the ABTONE. Second, we combine all the regressors in Equation 2 and Equation 1 into one single-, as opposed to two-step regression.

Furthermore, we study whether and how the 10-Q readability varies in response to good versus bad news. This analysis is motivated by the concern that firms strategically respond to bad news with lengthier 10-Qs relative to good news to obfuscate the bad news, leading to information overload and lower market efficiency (Chapman et al., 2019). We replace the dependent variable in Equation (1) with the Gunning fog readability index (READ) and reestimate the model. If managers indeed intentionally obfuscate bad news with lengthier 10-Q filings, then we expect READ to be higher (less readable) for bad news than for good news on average. The obfuscation hypothesis predicts a negative coefficient of QRET×NEG.

Table 3 Panel B presents the regression results of Equation (1), with TEX being ABTONE (Column 1), TONE (Column 2) and READ (Column 3 and 4) respectively. All regressions include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. The coefficients of QRET, NEG and QRET×NEG are similar between Column 1 and 2. In both columns, the coefficient of QRET×NEG is significantly positive, which suggests that firms tend to emphasize more the impact of bad news comparing to good news. Emphasizing bad news more than good news introduces a downward bias but provides warnings to financial information users, enhancing the stewardship role of financial reporting. The significance of QRET suggests that firms also emphasize the positive impact of good news, but to a lesser degree comparing to bad news. In Column 3 and 4, the coefficient of QRET×NEG is not significant, indicating that the readability of 10-Qs does not vary between good and bad news. This result suggests that the incremental length in 10-Q in response to bad news relative to good news does not add information processing costs to investors in terms of readability.

Overall, the results demonstrate that 10-Qs are generally lengthier, more news-consistent and less timelier in response to bad news comparing to good news. In addition, 10-Qs tend to emphasize more the impact of bad news in comparison with good news. The incremental length in 10-Qs in response to bad news does not make them less readable relative to 10-Qs in response to good news.

4.3 Is 8-K narrative disclosure more responsive to bad news than good news?

Table 4 Panel A presents the regression result of Equation 3. Column 2, 4, 6 and 7 include firm and time fixed effects and standard errors are clustered at 4-digit SIC code industry level. Our clustering approach yields 382 clusters in 8-K sample (approximately 313 observations per cluster on average). As predicted by H1, the coefficient of ΔDRET×NEG is significantly negative for NW, consistent with 8-K narratives being lengthier in response to bad news comparing to good news. Also, consistent with H2, the coefficient of ΔDRET×NEG is significantly positive for TONE, which suggests that 8-K narratives are more news-consistent in response to bad

news comparing to good news. Notice that due to the limitations discussed in Section 3.1 regarding using 8-K corpora to study the linguistic tone, the tone results obtained in 8-K sample may serve only as supplemental evidence on the news-consistency of narrative disclosure. Finally, in line with H3, the coefficient of QRET×NEG is significantly positive for TLAG, which suggests that 8-K reporting time lag is shorter in response to bad news comparing to good news—that is, 8-K filings respond to bad news in a more timely manner comparing to good news. Column 7 presents the results of the same model using a subsample with strictly positive TLAG to address the concern that the market return movements may be triggered by the filing of 8-K report on the same day (TLAG = 0), as opposed to that the 8-Ks are responding to the prior news releases. Our results on asymmetric timeliness of narrative disclosure sustain in Column 7. We repeat the above main analyses using the restricted 8-K sample, and the results remain unchanged (see Table 2 of Online Appendix).

We perform three additional tests to assess the responsiveness of 8-K to good versus bad news, making use of the unique data structure of 8-K filings. First, we test whether firms report more 8-K items per day in response to bad news comparing to good news by replacing NITEM as the dependent variable in Equation 3. Second, we analyze whether firms are more likely to report more 8-K filings per day in response to bad news by estimating an ordered logistics version of Equation 3 on N8K (N8K = 1, 2, 3, 4). Last but not least, we examine whether firms are more likely to report more promptly via 8-K in response to bad news by estimating an ordered logistics version of Equation 3 on TLAG using the restricted 8-K sample. If the 8-K narrative disclosure is conservative, we expect firm to report more 8-K items and 8-K filings per day in response to bad news comparing to good news, which is reflected as significantly negative β_3^{NITEM} and β_3^{N8K}.

Table 4 Panel B presents the regression results for three additional tests. In line with previous predictions, the coefficients of $\Delta DRET \times BN$ are significantly negative for NITEM and N8K, and is significantly positive for TLAG. Column 1 presents the result of NITEM using an ordinary least square (OLS) regression[17] with firm and time fixed effects and clustered standard errors at industry level identified by 4-digit SIC codes. The significantly positive coefficient (0.232) of ΔDRET shows that for good news, the number of 8-K items reported is positively associated with the magnitude of change in stock returns. Furthermore, β_3^{NITEM} suggests that controlling for the size of daily changes in stock returns, a negative change in returns leads to 0.552 more reported 8-K items than a positive change, which is equivalent to 17% increase based on the average number of 8-K items reported. Column 2 and 3 present results of ordered logistics models for N8K and TLAG. The baseline group of N8K regression is 1. The significantly positive coefficient (1.076) of ΔDRET shows that for

[17] We choose OLS model for NITEM because the value of NITEM ranges from 1 to 16, which creates too many cutoffs for the ordered logistic model.

good news, the likelihood of reporting more number of 8-K filings is positively associated with the magnitude of change in stock returns. Moreover, β_3^{N8K} suggests that controlling for the size of daily changes in stock returns, a negative change in returns leads to a 1.358 increase in the log odds of reporting more number of 8-K filings than a positive change. The baseline group of TLAG regression using restricted 8-K sample is 0. Similarly, the significantly negative coefficient (-0.944) of ΔDRET shows that for good news, the likelihood of reporting in more days (reporting time lag being longer) is negatively associated with the magnitude of change in stock returns. Also, β_3^{TLAG} suggests that controlling for the size of daily changes in stock returns, a negative change in returns leads to a 1.436 decrease in the log odds of reporting time lag being longer than a positive change, consistent with 8-K filings respond more timely to bad news relative to good news.

Overall, the results demonstrate that 8-K filings are on average lengthier, more news-consistent and timelier in response to bad news comparing to good news. Moreover, firms are more likely to report larger number of 8-K items and 8-K filings per day in response to bad news comparing to good news. All results are consistent with 8-K narrative disclosure being conservative.

5 Auxiliary Analyses

5.1 Narrative and Conditional Conservatism

In this section, we study whether and how narrative conservatism interacts with conditional conservatism. Narrative conservatism may complement conditional conservatism if managers apply consistent reporting policies to recognition and disclosure. In this case, we expect to find narrative conservatism being more pronounced in high conditional conservatism subsamples. However, if managers view the two as substitutes, they may choose to be less conservative in recognition but more conservative in narratives, or vise versa. In this case, we expect to find narrative conservatism being more pronounced in low conditional conservatism subsamples.

We construct a firm-quarter measure of conditional conservatism using the 10-Q sample following Khan and Watts (2009). Specifically, we run the following cross-sectional model for each fiscal year from 1993 to 2020:

$$
\begin{aligned}
EARN_{i,t} = {} & \beta_0 + \beta_1 NEG_{i,t} + \beta_2 RET_{i,t} \\
& + \beta_3 RET_{i,t} \times SIZE_{i,t} + \beta_4 RET_{i,t} \times MTB_{i,t} + \beta_5 RET_{i,t} \times LEV_{i,t} + \beta_6 RET_{i,t} \times NEG_{i,t} \\
& + \beta_7 RET_{i,t} \times NEG_{i,t} \times SIZE_{i,t} + \beta_8 RET_{i,t} \times NEG_{i,t} \times MTB_{i,t} + \beta_9 RET_{i,t} \times NEG_{i,t} \times LEV_{i,t} \\
& + \beta_{10} SIZE_{i,t} + \beta_{11} MTB_{i,t} + \beta_{12} LEV_{i,t} \\
& + \beta_{13} NEG_{i,t} \times SIZE_{i,t} + \beta_{14} NEG_{i,t} \times MTB_{i,t} + \beta_{15} NEG_{i,t} \times LEV_{i,t} + \epsilon_{i,t}
\end{aligned} \tag{4}
$$

We obtain the estimates from Equation 4 and use them to calculate C_SCORE and G_SCORE following Equation 5 and Equation 6 respectively. C_SCORE captures the incremental timeliness of bad news and measures conditional conservatism, with more positive value being more conditionally conservative. G_SCORE captures the timeliness of good news.

$$
C\_SCORE_{i,t} = \beta_6 + \beta_7 SIZE_{i,t} + \beta_8 MTB_{i,t} + \beta_9 LEV_{i,t} \tag{5}
$$

$$
G\_SCORE_{i,t} = \beta_2 + \beta_3 SIZE_{i,t} + \beta_4 MTB_{i,t} + \beta_5 LEV_{i,t} \tag{6}
$$

The mean of coefficients and standard errors obtained in Equation 4 and the summary statistics of C_SCORE and G_SCORE (see Table 3 of Online Appendix) are consistent with Khan and Watts (2009) in general. Then we divide the full 10-Q sample into five subsamples according to the C_SCORE, and we label the subsample with below 20% (above 80%) percentile C_SCORE as low (high) conditional conservatism subsample. Finally we repeat our main analyses as specified by Equation 1.

Table 5 presents the results of Equation 1 using the low and high conditional conservatism subsamples. Column 1, 3 and 5 (Column 2, 4 and 6) show the results of low (high) conditional conservatism subsample, and the row Diff. QRET×NEG illustrates the difference in the coefficient QRET×NEG between the low and high subsamples. First, the signs of the coefficients QRET×NEG are consistent with the those in the main 10-Q results, confirming that 10-Q filings are lengthier, more news-consistent and less timely in response to bad news relative to good news. Second, in terms of number of words, the coefficient QRET×NEG of low conditional conservatism subsample (-0.179) is significantly more negative than that of high conditional conservatism subsample (-0.095). Third, in terms of tone, the coefficient QRET×NEG of low conditional conservatism subsample (2.982) is significantly more positive than that of high conditional conservatism subsample (1.635). However,

we do not find evidence that the two subsamples differ significantly in terms of reporting time lag. Overall, the results suggest that firms with low conditional conservatism tend to be more conservative in narratives, supporting the substitution theory between narrative and conditional conservatism.

5.2 The Role of Narratives and Narrative Conservatism

In this section, we investigate whether and how the role of narratives affects narrative conservatism. We hypothesize that supplementary narratives may be more conservative than explanatory narratives, because managers have more discretion over the contents and the format of the former. We focus on two sections in 10-Q filings—MD&A and notes to financial statements. We consider narratives in the notes as explanatory narratives that "amplify or explain information recognized in the financial statements", and those in the MD&A as supplementary narratives that "add information to that in the financial statements or notes, including information that may be relevant but that does not meet all recognition criteria"(FASB, 1984, CON5-7). We expect to find narrative conservatism being more pronounced in the MD&A subsamples.

We extract the MD&A and the notes from 79,547 10-Q filings and count the number of total words, number of positive and negative words and number of negations in each section for each filing. Then we calculate the logarithm of number of total words (NW_MDA and NW_NOTE) and net positive tone per thousand words (TONE_MDA and TONE_NOTE) for each filing. Finally, we regress Equation 1 replacing TEX by NW_MDA, NW_NOTE, TONE_MDA and TONE_NOTE and compare their differences. We do not repeat the main analysis for narrative timeliness because the MD&A and the notes do not differ in timeliness by construction, since they are extracted from the same document.

Table 6 presents the results of Equation 1 using the MD&A and note sections. Column 1, 3 (Column 2, 4) show the results of the MD&A (note) section, and the row Diff. QRET×NEG illustrates the difference in the coefficient QRET×NEG between the MD&A and note sections. First, the signs of the coefficients QRET×NEG are consistent with H1 and H2, confirming that both sections are lengthier and more news-consistent in response to bad news comparing to good news. Second, in terms of number of words, the coefficient QRET×NEG of MD&A section (-0.189) is significantly more negative than that of the note section (-0.159). Third, in terms of tone, the coefficient QRET×NEG of MD&A section (3.279) is significantly more positive than that of the note section (1.976). Overall, the results suggest that the narrative disclosure in the MD&A section is more conservative than that in the note section, consistent with managers having more discretion in supplementary narratives and choosing to be conservative in narratives.

5.3 Narrative Conservatism in Voluntary and Mandatory Disclosure

In this section, we examine whether and how narrative conservatism varies across voluntary and mandatory disclosure, using 8-K sample to measure the two types of disclosure following He and Plumlee (2020). If managers on average choose to be conservative in narratives voluntarily, then voluntary disclosure should be more conservative than mandatory disclosure in narratives.

We divide the full 8-K sample into voluntary and mandatory disclosure subsamples by the 8-K items reported in each observation. We classify an 8-K observation into voluntary disclosure subsample if it contains at least one of the voluntary 8-K items (Items 5, 9, 12 before and Items 8.01, 7.01, 2.02 after the 8-K reform) identified by prior literature (Lerman & Livnat, 2010; He & Plumlee, 2020). Otherwise, we classify it into mandatory disclosure subsample. Then, we regress Equation 3 using the two subsamples. Furthermore, to inspect if the types of events reported in 8-K filings also affect narrative conservatism, we create one indicator variable for every 8-K item,[18] where the indicator variable takes 1 if the 8-K observation contains that specific item, and 0 otherwise. Finally, we regress the textual metrics on the 8-K item indicators.

Table 7 Panel A presents the results of Equation 3 using the 8-K voluntary and mandatory disclosure subsamples. Column 1, 3 and 5 (Column 2, 4 and 6) show the results of the voluntary (mandatory) disclosure subsample, and the row Diff. ΔDRET$\times$NEG illustrates the difference in the coefficient ΔDRET$\times$NEG between voluntary and mandatory disclosure. First, the signs of the coefficients ΔDRET$\times$NEG in Column 1, 3 and 5 are consistent with H1, H2 and H3, suggesting that voluntary disclosure is lengthier, more news-consistent and more timely in response to bad news comparing to good news. However, for mandatory disclosure the coefficients of ΔDRET$\times$NEG in Column 2 and 4 are not significantly different from zero, and only the coefficient in Column 6 is significantly positive. This result suggests that mandatory disclosure is only conservative in terms of narrative timeliness. Second, given the difference between the two types of disclosure, voluntary disclosure is more conservative than mandatory disclosure in narratives, consistent with managers being conservative in narrative disclosure voluntarily.

Table 7 Panel B presents the results of regressing the textual metrics on the 8-K item indicators. Column 1, 3 and 5 (Column 2, 4 and 6) show the results of the subsamples before (after) the 8-K reform. The items in bold are voluntary items. In terms of narrative length, the voluntary items Other Events (Item 5 before and Item 8 after) and Regulation FD (Item 9 before and Item 7 after) are associated with lengthier 8-Ks. The other voluntary item Results of Operations (Item 12 before and Item 2 after) is associated with shorter 8-Ks

[18] For brevity, we aggregate the subcategories of 8-K items into one item for observations after August 23 of 2004. For example, Item 1 subsumes Item 1.01, 1.02, 1.03 and 1.04. If the observation contains any one of the four subcategories, the indicator variable Item 1 is set to 1, and otherwise 0. The same method applies to the rest of 8-K items.

before the reform (-1.255), but becomes lengthier after the reform (0.201). In terms of narrative tone, before the reform Item 9 and Item 12 are significantly associated with positive tone, whereas after the reform all voluntary items become associated with negative tone. In terms of reporting time lag, all voluntary 8-K items are associated with shorter reporting lag. This result suggests that overall, voluntary 8-K filings have been transitioning towards lengthier, more negative, and more timely filings in recent years.

5.4 Managerial Incentives and Narrative Conservatism

In this section, we inspect how narrative conservatism varies in three setting where managers have strong incentives to disclose or withhold bad news. First, when executives anticipate a stock option grant, they have incentives to disclose bad news prior to the grant to reduce the stock price to ensure a lower option exercise price at the grant date (Aboody & Kasznik, 2000; Baker, Collins, & Reitenga, 2003; McAnally, Srivastava, & Weaver, 2008). Therefore, we expect narrative disclosure to be more responsive to bad news relative to good news when firms grant stock option of high value to their executives. Second, when firms announce seasoned equity offering (SEO), managers have incentives to manipulate investor perceptions upward through earnings numbers (Teoh et al., 1998) and through tone management in earnings press (Huang et al., 2014). Similarly, we expect managers to be less responsive to bad news relative to good news in their narrative disclosure under SEO. Third, when firms face high litigation risk, managers have incentives to predisclose bad news voluntarily to avoid being sued or to reduce the cost of resolving litigation that inevitably follows in bad news quarters (Skinner, 1994, 1997). Therefore, we expect narrative disclosure to be more responsive to bad news relative to good news under high litigation risk.

To test the stock option grants setting, we collect stock option grant data from ExecuComp from 1993 to 2006. We sum up the Black Scholes fair value of stock options granted to each individual executive (BLKSHVAL) by firm-year to create a measure of the value of stock options granted to executives for given firm in a given year (BLKSHVALSUM). Then we match the stock option grant data to our 10-Q data by GVKEY and fiscal year and we drop all unmatched observations and matched observations with non-positive or missing BLKSHVALSUM. Finally we divide the full 10-Q sample into five subsamples according to the BLKSHVALSUM of each observation, and we label the subsample with below 20% (above 80%) percentile BLKSHVALSUM as low (high) stock option value subsample. We reestimate Equation 1 using the low and high stock option value subsamples and compare their results. To test the SEO setting, we use Sale of Common and Preferred Stock (SSTKY) data from Compustat from 1993 to 2020. We drop all observations with missing or negative SSTKY and we classify the observations with zero SSTKY into non-SEO subsample. Then we divide the full

10-Q sample into five subsamples according to the SSTKY of each observation, and we label the subsample with above 80% percentile SSTKY as SEO subsample. We reestimate Equation 1 using the non-SEO and SEO subsamples and compare their results. [LITIGATION SETTING TO BE TESTED]

Table 8 Panel A presents the results of Equation 1 using high and low value stock option grant subsamples. First, the coefficients of QRET×NEG indicate that the narrative disclosures in 10-Qs from firms that issue stock option grants are lengthier and more news-consistent in response to bad news relative to good news. Comparing to the 10-Q main results, these 10-Qs from firms that issue stock option grants are no longer significantly less timely in response to bad news relative to good news. Second, comparing the results between the low and high value stock option grant subsamples, only the difference in number of words is significant (0.076). This shows that when managers anticipate high value stock option grant, they respond to bad news with lengthier reports relative to good news, consistent with managers being more conservative when they have strong incentives to disclose bad news. Table 8 Panel B presents the results of Equation 1 using non-SEO and SEO subsamples. First, the coefficients of QRET×NEG are consistent with the 10-Q main results. Second, comparing the results between the non-SEO and SEO subsamples, only the difference in tone is significant (1.091). This shows that when firms are undergoing SEO, managers respond to bad news with less new-consistent tone relative to good news, consistent with managers being less conservative when they have strong incentives to withhold bad news.

5.5 Untabulated Robustness Checks

6 Conclusions

References

Aboody, D. (1996). Recognition versus Disclosure in the Oil and Gas Industry. *Journal of Accounting Research*, *34*, 21–32.

Aboody, D., & Kasznik, R. (2000). CEO Stock Option Awards and the Timing of Corporate Voluntary Disclosures. *Journal of Accounting and Economics*, *29*, 73–100.

Alford, A. W., Jones, J. J., & Zmijewski, M. E. (1994). Extensions and Violations of the Statutory SEC Form 10-K Filing Requirements. *Journal of Accounting and Economics*, *17*(1-2), 229–254.

Baiman, S., & Verrecchia, R. E. (1996). The Relation Among Capital Markets, Financial Disclosure, Production Efficiency, and Insider Trading. *Journal of Accounting Research*, *34*(1), 1–22.

Baker, T., Collins, D., & Reitenga, A. (2003). Stock Option Compensation and Earnings Management Incentives. *Journal of Accounting, Auditing & Finance*, *18*(4), 557–582.

Bamber, E. M., Bamber, L. S., & Schoderbek, M. P. (1993). Audit Structure and Other Determinants of Audit Report Lag: An Empirical Analysis. *AUDITING: A Journal of Practice & Theory*, *12*(1), 1–23.

Bao, D., Kim, Y., Mian, G. M., & Su, L. N. (2019). Do Managers Disclose or Withhold Bad News? Evidence from Short Interest. *The Accounting Review*, *94*(3), 1–26.

Barth, M. E., Clinch, G., & Shibano, T. (2003). Market Effects of Recognition and Disclosure. *Journal of Accounting Research*, *41*(4), 581–609.

Basu, S. (1997). The Conservatism Principle and The Asymmetric Timeliness of Earnings. *Journal of Accounting and Economics*, *24*(1), 3–37.

Beaver, W. H., & Ryan, S. G. (2005). Conditional and Unconditional Conservatism: Concepts and Modeling. *Review of Accounting Studies*, *10*(2-3), 269–309.

Bloomfield, R. (2008). Discussion of "Annual report readability, current earnings, and earnings persistence". *Journal of Accounting and Economics*, *45*(2-3), 248–252.

Bushee, B. J., Gow, I. D., & Taylor, D. J. (2018). Linguistic Complexity in Firm Disclosures: Obfuscation or Information? *Journal of Accounting Research*, *56*(1), 85–121.

Carter, M. E., & Soo, B. S. (1999). The Relevance of Form 8-K Reports. *Journal of Accounting Research*, *37*(1), 119–132.

Cazier, R. A., Merkley, K. J., & Treu, J. S. (2020). When are Firms Sued for Qualitative Disclosures? Implications of the Safe Harbor for Forward-Looking Statements. *The Accounting Review*, *95*(1), 31–55.

Chapman, K. L., Reiter, N., White, H. D., & Williams, C. D. (2019). Information overload and disclosure smoothing. *Review of Accounting Studies*, *24*(4), 1486–1522.

Chen, W., Hribar, P., & Melessa, S. (2018). Incorrect Inferences When Using Residuals as Dependent Variables. *Journal of Accounting Research*, *56*(3), 751–796.

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, Liquidity, and the Cost of Capital. *The Journal of Finance*, *46*(4), 1325–1359.

EY. (2012). To the Point: Now Is the Time to Address Disclosure Overload.

FASB. (1984). *Statement of Financial Accounting Concepts No. 5—Recognition and Measurement in Financial Statements of Business Enterprises.*

FASB. (2018). *Conceptual Framework for Financial Reporting—Chapter 3, Qualitative Characteristics of Useful Financial Information.*

Gao, M., & Huang, J. (2020). Informing the Market: The Effect of Modern Information Technologies on Information Production. *The Review of Financial Studies*, *33*(4), 1367–1411.

Hassan, T. A., Hollander, S., van Lent, L., & Tahoun, A. (2019). Firm-Level Political Risk: Measurement and Effects. *The Quarterly Journal of Economics*, *134*(4), 2135–2202.

He, J., & Plumlee, M. A. (2020). Measuring Disclosure Using 8-K Filings. *Review of Accounting Studies*, forthcoming.

Huang, X., Teoh, S. H., & Zhang, Y. (2014). Tone Management. *The Accounting Review*, *89*(3), 1083–1113.

Kasznik, R., & Lev, B. (1995). To Warn or Not to Warn: Management Disclosures in the Face of an Earnings Surprise. *The Accounting Review*, *70*(1), 113–134.

Khan, M., & Watts, R. L. (2009). Estimation and Empirical Properties of a Firm-Year Measure of Accounting Conservatism. *Journal of Accounting and Economics*, *48*(2-3), 132–150.

Knechel, W. R., & Payne, J. L. (2001). Additional Evidence on Audit Report Lag. *AUDITING: A Journal of Practice & Theory*, *20*(1), 137–146.

Kothari, S. P., Shu, S., & Wysocki, P. D. (2009). Do Managers Withhold Bad News? *Journal of Accounting Research*, *47*(1), 241–276.

Lerman, A., & Livnat, J. (2010). The New Form 8-K Disclosures. *Review of Accounting Studies*, *15*(4), 752–778.

Leuz, C., & Schrand, C. (2009). Disclosure and the Cost of Capital: Evidence from Firms' Responses to the Enron Shock. *NBER Working Paper Series*.

Leuz, C., & Verrecchia, R. E. (2000). The Economic Consequences of Increased Disclosure. *Journal of Accounting Research*, *38*, 91–124.

Li, F. (2008). Annual Report Readability, Current Earnings, and Earnings Persistence. *Journal of Accounting and Economics*, *45*(2-3), 221–247.

Li, F. (2010a). The Information Content of Forward-Looking Statements in Corporate Filings—A Naïve Bayesian Machine Learning Approach. *Journal of Accounting Research*, *48*(5), 1049–1102.

Li, F. (2010b). Textual Analysis of Corporate Disclosures: A Survey of the Literature. *Journal of Accounting Literature*, *29*, 143–165.

Lo, K., Ramos, F., & Rogo, R. (2017). Earnings Management and Annual Report Readability. *Journal of Accounting and Economics*, *63*(1), 1–25.

Loughran, T., & Mcdonald, B. (2011). When Is a Liability Not a Liability? Textual Analysis, Dictionaries, and 10-Ks. *The Journal of Finance*, *66*(1), 35–65.

Loughran, T., & Mcdonald, B. (2014). Measuring Readability in Financial Disclosures. *The Journal of Finance*, *69*(4), 1643–1671.

McAnally, M. L., Srivastava, A., & Weaver, D. C. (2008). Executive Stock Options, Missed Earnings Targets, and Earnings Management. *The Accounting Review*, *33*, 185–216.

Petersen, M. A. (2009). Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. *Review of Financial Studies*, *22*(1), 435–480.

Pinsker, R. E. (2006). Has Firms' Form 8-K Filing Behavior Changed Since Section 409 of the Sarbanes-Oxley Act Became Effective? *Working Paper*.

Rogers, J. L., Van Buskirk, A., & Zechman, S. L. C. (2011). Disclosure Tone and Shareholder Litigation. *The Accounting Review*, *86*(6), 2155–2183.

Schipper, K. (2007). Required Disclosures in Financial Reports. *The Accounting Review*, *82*(2), 301–326.

SEC. (2004). *Final Rule: Additional Form 8-K Disclosure Requirements and Acceleration of Filing Date; Rel. No. 33-8400; S7-22-02.*

SEC. (2009). *Final Rule: Interactive Data to Improve Financial Reporting; Rel. No. 33-9002; S7-11-08.*

Segal, B., & Segal, D. (2016). Are managers strategic in reporting non-earnings news? Evidence on timing and news bundling. *Review of Accounting Studies*, *21*(4), 1203–1244.

Skinner, D. J. (1994). Why Firms Voluntarily Disclose Bad News. *Journal of Accounting Research*, *32*(1), 38–60.

Skinner, D. J. (1997). Earnings Disclosures and Stockholder Lawsuits. *Journal of Accounting and Economics*, *23*, 249–282.

Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics*, 37.

Tottie, G. (1991). *Negation in English speech and writing: A study in variation* (Vol. 4). Academic Press.

Yermack, D. (1997). Good Timing: CEO Stock Option Awards and Company News Announcements. *The Journal of Finance*, *52*(2), 449–476.

Figure 1: 8-K Merging Process

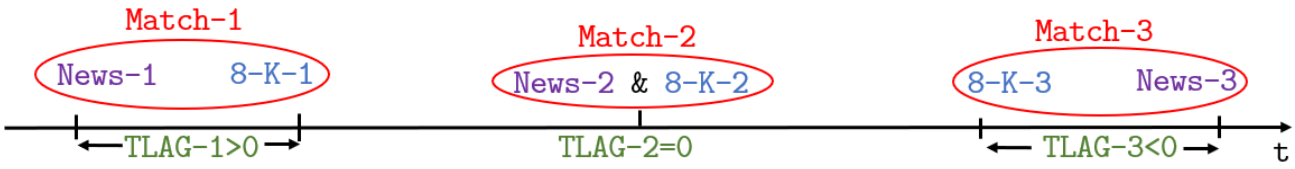

Figure 1 illustrates the 8-K sample matching process. We match every 8-K day to its nearest news day. The news day can be earlier than (Match-1), the same as (Match-2) or later than (Match-3) the 8-K day. TLAG is defined as the number of days elapsed between the 8-K filing date and its nearest news day.

Figure 2: 8-K Item Distribution

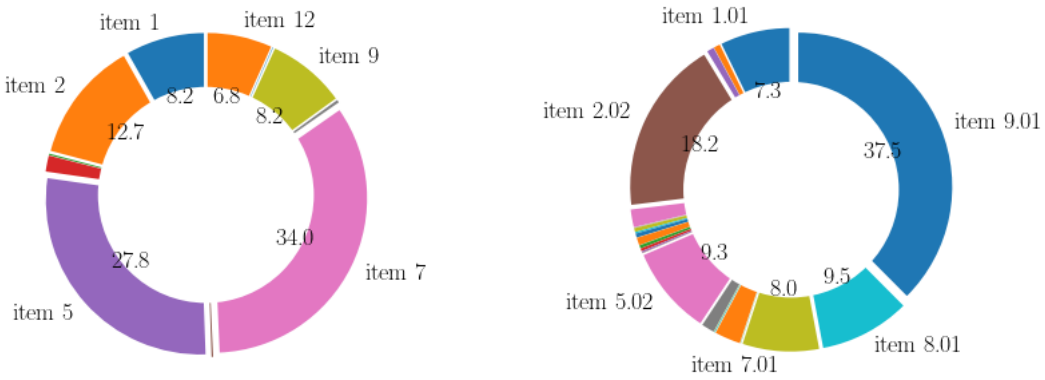

Figure 2 illustrates the 8-K item distribution before (left) and after (right) August 23 of 2004. Each share of pie chart shows the percentage of corporate events reported under each 8-K items. See 8-K item list in Appendix D.

Table 1. Sample Selection Process

10-Q		
Numer of observations:		
Retrieved from EDGAR		575,579
After merging with COMP and CRSP data		190,336
After merging with I\B\E\S and segment data		110,116
After dropping obs. with missing values in key variables and screening		**91,607**
8-K		
Numer of observations:		
Retrieved from EDGAR		1,489,626
After merging and matching with COMP and CRSP data		442,611
(-) Number of obs. from utility and financial firms	112,739	
(-) Number of firm-quarters with missing values in SIC, SIZE, MTB, LEV, or with non-positive total assets or book value of equity or common shares outstanding, or with common share price less than $1	48,230	
(-) Number of obs. with total words less than 1% percentile (133 words)	2,776	
(-) Number of obs. that are reversals of previous news day	5,132	
After dropping obs. with missing values in key variables and data screening		273,734
After dropping obs. with negative or larger than 99% percentile TLAG (Full 8-K sample)		**119,616**
After dropping obs. with TLAG larger than four (five) days after (before) the 8-K reform (Restricted 8-K sample)		**40,700**

Table 2. Panel A: Summary Statistics 10-Q

	count	mean	std	min	25%	50%	75%	max
Textual Vars.								
NW	91607	9.020	0.757	7.120	8.506	9.086	9.547	13.544
nw	91607	10937	10204	1236	4942	8829	13997	752337
TONE	91607	-8.921	7.236	-63.579	-13.127	-7.875	-3.866	24.215
TLAG	91607	39	6	0	36	40	44	52
READ	91607	38.161	42.160	14.580	17.840	20.210	39.660	262.515
ABTONE	91607	0.000	6.919	-55.759	-3.946	0.939	4.777	34.181
Financial Vars.								
QRET	91607	0.018	0.253	-1.579	-0.113	0.007	0.130	4.849
NEG	91607	0.483	0.500	0	0	0	1	1
SIZE	91607	6.447	1.776	2.002	5.175	6.317	7.563	11.206
MTB	91607	3.515	4.009	0.288	1.485	2.343	3.902	30.902
LEV	91607	0.192	0.182	0.000	0.011	0.162	0.315	0.724
AF	91607	0.043	0.066	-0.262	0.023	0.049	0.073	0.227
AFE	91607	-0.021	0.067	-0.445	-0.018	-0.002	0.002	0.078
BUSSEG	91607	0.859	0.447	0.693	0.693	0.693	0.693	2.773
GEOSEG	91607	0.898	0.532	0.693	0.693	0.693	0.693	3.045
AGE	91607	8.312	1.033	5.811	7.635	8.420	9.089	10.288
EARN	91607	0.005	0.042	-0.201	0.001	0.012	0.023	0.084
ΔEARN	91607	0.002	0.031	-0.126	-0.006	0.001	0.008	0.150
STD_EARN	91607	0.020	0.030	0.001	0.005	0.009	0.021	0.188
STD_QRET	91607	0.089	0.070	0.007	0.040	0.070	0.115	0.379
LOSS	91607	0.242	0.429	0	0	0	0	1

Table 2. Panel B: Summary Statistics 8-K

	count	mean	std	min	25%	50%	75%	max
Textual Vars.								
NW	119616	6.093	0.926	4.898	5.553	5.846	6.358	12.486
nw	119616	1339	6398	133	257	345	576	264704
TONE	119616	-0.551	7.424	-97.851	-3.049	0.000	3.677	45.929
TLAG	119616	15	17	0	2	9	21	93
N8K	119616	1	0	1	1	1	1	4
NITEM	119616	2	1	1	2	2	2	16
Financial Vars.								
DRET	119616	0.003	0.097	-0.833	-0.039	-0.003	0.041	5.991
ΔDRET	119616	-0.018	0.187	-9.062	-0.121	-0.050	0.100	5.989
BN	119616	0.542	0.498	0	0	1	1	1
SIZE	119616	6.326	1.993	2.122	4.896	6.262	7.664	11.379
MTB	119616	3.740	4.781	0.123	1.366	2.293	4.055	33.390
LEV	119616	0.205	0.193	0.000	0.012	0.171	0.334	0.751

Table 2 Panel A and Table 2 Panel B present the summary statistics for key variables in 10-Q and 8-K sample. READ and all financial variables except returns are winsorized at 1% and 99% level. See Appendix B and Appendix C for textual and financial variable definitions.

Table 2. Panel C: Correlation Matrix 10-Q

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) NW		-0.456	-0.192	-0.083	-0.007	0.002	0.255	0.058	0.036	-0.068	0.011	-0.040	-0.116	0.002	0.091	-0.030	-0.385
(2) TONE	-0.482		0.016	0.086	0.020	-0.021	-0.062	-0.014	0.072	0.072	0.102	0.059	0.157	-0.003	-0.148	-0.089	0.956
(3) TLAG	-0.263	0.021		0.048	-0.022	0.034	-0.331	-0.022	0.009	-0.092	-0.127	-0.228	-0.137	-0.005	0.121	0.189	0.017
(4) READ	-0.252	0.169	0.125		-0.016	0.016	-0.014	-0.035	0.063	0.045	0.002	0.088	0.059	0.002	-0.047	-0.051	0.061
(5) QRET	-0.007	0.028	-0.032	-0.029		-0.684	-0.065	-0.026	0.002	-0.018	0.155	0.002	0.063	0.036	0.011	0.266	0.000
(6) NEG	0.003	-0.024	0.033	0.028	-0.866		0.000	0.013	-0.002	0.015	-0.124	-0.018	-0.071	-0.019	0.016	-0.118	0.000
(7) SIZE	0.264	-0.047	-0.333	-0.078	-0.024	-0.001		0.234	0.100	0.077	0.270	0.344	0.259	-0.024	-0.198	-0.310	0.000
(8) MTB	0.046	0.040	-0.042	-0.026	-0.055	0.033	0.382		0.046	-0.156	0.120	-0.088	-0.041	0.022	0.159	0.036	0.000
(9) LEV	0.014	0.076	0.000	0.075	0.003	-0.004	0.143	-0.111		0.167	-0.068	0.101	0.039	0.034	-0.124	-0.072	0.070
(10) AF	-0.018	0.062	-0.125	0.035	-0.087	0.072	0.026	-0.299	0.251		0.057	0.202	0.472	0.016	-0.257	-0.145	0.000
(11) AFE	0.040	0.099	-0.149	-0.023	0.181	-0.157	0.232	0.226	-0.052	0.060		0.072	0.241	0.004	-0.143	-0.159	0.000
(12) AGE	-0.035	0.063	-0.232	0.071	0.011	-0.015	0.336	-0.081	0.146	0.211	0.060		0.211	0.004	-0.223	-0.262	0.000
(13) EARN	-0.139	0.223	-0.146	0.065	0.114	-0.098	0.299	0.282	-0.073	0.247	0.357	0.172		0.302	-0.412	-0.229	0.000
(14) ΔEARN	0.005	0.011	-0.014	-0.006	0.059	-0.041	-0.013	0.019	0.024	0.016	0.091	0.003	0.299		0.055	0.015	0.000
(15) STD_EARN	0.092	-0.194	0.153	-0.052	-0.024	0.028	-0.281	0.093	-0.201	-0.205	-0.153	-0.250	-0.275	0.036		0.241	0.000
(16) STD_QRET	-0.047	-0.083	0.214	-0.023	0.128	-0.088	-0.325	-0.041	-0.102	-0.131	-0.110	-0.275	-0.188	0.004	0.277		0.000
(17) ABTONE	-0.404	0.944	0.020	0.139	0.000	-0.001	0.017	0.063	0.076	-0.004	0.025	0.004	0.063	-0.009	-0.066	-0.010	

Table 2. Panel D: Correlation Matrix 8-K

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) NW		-0.425	0.133	0.154	0.192	0.021	-0.015	0.011	-0.024	0.042	0.075
(2) TONE	-0.414		-0.079	-0.024	-0.084	0.003	0.015	-0.011	0.069	0.004	-0.035
(3) TLAG	0.119	-0.110		-0.041	-0.060	-0.016	-0.037	0.038	-0.093	-0.006	-0.035
(4) N8K	0.206	-0.043	-0.059		0.452	0.017	0.011	-0.006	0.032	0.000	0.022
(5) NITEM	0.205	-0.100	-0.093	0.303		0.009	0.005	-0.003	0.023	-0.003	0.033
(6) DRET	-0.001	0.009	-0.019	0.006	0.002		0.709	-0.572	-0.028	0.004	0.004
(7) ΔDRET	-0.016	0.019	-0.049	0.006	0.006	0.780		-0.738	0.069	-0.006	0.013
(8) BN	0.012	-0.012	0.049	-0.005	-0.004	-0.780	-0.863		-0.032	0.002	-0.009
(9) SIZE	0.029	0.075	-0.113	0.032	0.029	0.025	0.080	-0.032		0.192	0.167
(10) MTB	0.047	0.026	-0.016	0.003	-0.008	0.005	0.009	-0.003	0.350		0.086
(11) LEV	0.081	-0.043	-0.041	0.022	0.029	0.014	0.022	-0.011	0.213	-0.039	

Table 2 Panel C and Table 2 Panel D present the correlation matrix for key variables in 10-Q and 8-K sample. Pearson (Spearman) correlations are exhibited above (below) the diagonal. See Appendix B and Appendix C for variable definitions. READ and all financial variables except returns are winsorized at 1% and 99% level.

Table 3. Panel A: Main Results 10-Q

Dep. Vars.	(1) NW	(2) NW	(3) TONE	(4) TONE	(5) TLAG	(6) TLAG
QRET	0.248***	0.042***	-3.161***	0.272**	0.932***	-0.269**
	(15.24)	(3.41)	(-19.80)	(2.11)	(7.13)	(-2.34)
NEG	0.002	0.006	0.157**	-0.103**	-0.161***	0.024
	(0.27)	(1.23)	(2.38)	(-2.08)	(-2.97)	(0.65)
Sign Prediction	-	-	+	+	+	+
QRET×NEG	-0.546***	-0.141***	9.654***	1.927***	-5.612***	-0.698***
	(-19.00)	(-5.94)	(34.29)	(6.74)	(-24.35)	(-3.83)
SIZE	0.116***	0.017**	-0.398***	0.799***	-1.167***	-0.262***
	(79.86)	(2.04)	(-28.00)	(9.15)	(-100.34)	(-4.15)
MTB	-0.002***	-0.005***	0.019***	0.074***	0.077***	-0.023**
	(-2.70)	(-4.90)	(3.16)	(4.54)	(15.38)	(-2.23)
LEV	0.050***	0.322***	3.018***	-1.666***	1.495***	0.942***
	(3.74)	(9.38)	(23.14)	(-3.81)	(14.00)	(2.67)
Constant	8.222***	8.049***	-6.273***	-21.404***	45.609***	45.616***
	(763.58)	(150.83)	(-59.49)	(-34.05)	(528.25)	(84.02)
Observations	91,607	91,607	91,607	91,607	91,607	91,607
Adjusted R-squared	0.069	0.650	0.023	0.563	0.122	0.614
Year-quarter FE	NO	YES	NO	YES	NO	YES
Firm FE	NO	YES	NO	YES	NO	YES
Industry clustered SE	NO	YES	NO	YES	NO	YES

$$TEX_{i,t} = \beta_0 + \beta_1 QRET_{i,t} + \beta_2 NEG_{i,t} + \beta_3 QRET_{i,t} \times NEG_{i,t} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (1)$$

Table 3 Panel A presents the regression results of Equation (1). TEX represents a vector of textual properties that consists of number of words (NW), tone (TONE) and reporting time lag (TLAG). CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. Column 2, 4 and 6 include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 3. Panel B: ABTONE and Readability 10-Q

Dep. Vars.	(1) ABTONE	(2) TONE	(3) READ	(4) READ
QRET	0.214*	0.275**	-0.254	-0.071
	(1.68)	(2.15)	(-0.41)	(-0.11)
NEG	-0.107**	-0.107**	0.093	0.118
	(-2.18)	(-2.18)	(0.33)	(0.43)
Sign Prediction	+	+	-	-
QRET×NEG	0.686**	0.686**	1.596	1.354
	(2.54)	(2.54)	(1.21)	(1.00)
SIZE	1.193***	0.398***	0.289	0.244
	(14.22)	(4.75)	(0.50)	(0.40)
MTB	-0.021	0.065***	-0.004	0.012
	(-1.30)	(4.13)	(-0.06)	(0.17)
LEV	-1.119**	-1.119**	-3.625	-4.293*
	(-2.42)	(-2.42)	(-1.46)	(-1.73)
EARN	3.548	10.371***		8.615
	(1.35)	(3.96)		(1.15)
STD_QRET	4.804***	-1.627***		-0.729
	(14.72)	(-4.99)		(-0.38)
STD_EARN	14.141***	-6.429***		7.917
	(10.71)	(-4.87)		(1.01)
AGE	-0.424*	-0.054		2.832**
	(-1.90)	(-0.24)		(2.38)
BUSSEG	-0.204	0.455**		0.775
	(-0.93)	(2.08)		(0.48)
GEOSEG	1.130***	0.261		0.721
	(5.38)	(1.24)		(0.66)
LOSS	1.815***	-1.465***		0.356
	(17.67)	(-14.26)		(0.86)
ΔEARN	4.805***	-6.212***		0.091
	(4.72)	(-6.10)		(0.02)
AFE	-1.700***	4.276***		-2.205
	(-2.98)	(7.50)		(-0.87)
AF	2.299**	-2.692***		-5.551
	(2.29)	(-2.68)		(-0.99)
Constant	-14.528***	-19.388***	182.073***	159.770***
	(-8.22)	(-10.97)	(18.12)	(12.22)
Observations	91,607	91,607	91,607	91,607
Adjusted R-squared	0.533	0.573	0.442	0.442
Year-quarter FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry clustered SE	YES	YES	YES	YES

$$TEX_{i,t} = \beta_0 + \beta_1 QRET_{i,t} + \beta_2 NEG_{i,t} + \beta_3 QRET_{i,t} \times NEG_{i,t} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (1)$$

Table 3 Panel B presents the regression results of Equation (1), with TEX being ABTONE (Column 1), TONE (Column 2) and READ (Column 3 and 4) respectively. CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB), leverage ratio (LEV) in Column 3. Other regressors in Equation 2 are added as control variables to the rest of the columns. See Appendix B and Appendix C for variable definitions. READ and all financial variables except returns are winsorized at 1% and 99% level. All regressions include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 4. Panel A: Main Results 8-K

Dep. Vars.	(1) NW	(2) NW	(3) TONE	(4) TONE	(5) TLAG	(6) TLAG	(7) TLAG>0
ΔDRET	0.600***	0.050	-3.701***	-0.878**	-10.561***	-13.924***	-9.996***
	(15.46)	(1.43)	(-11.88)	(-2.48)	(-14.61)	(-10.65)	(-9.70)
BN	0.044***	0.007	-0.286***	-0.082	0.374**	0.190	-0.120
	(5.33)	(1.15)	(-4.36)	(-1.30)	(2.46)	(1.02)	(-0.68)
Sign Prediction	-	-	+	+	+	+	+
ΔDRET×BN	-0.994***	-0.108**	6.071***	1.843***	14.575***	20.861***	13.804***
	(-20.21)	(-2.15)	(15.38)	(2.90)	(15.92)	(11.64)	(11.40)
SIZE	-0.009***	-0.010	0.217***	0.140***	-0.961***	-0.493***	-0.198**
	(-5.70)	(-1.47)	(17.94)	(2.66)	(-34.33)	(-5.22)	(-2.03)
MTB	0.007***	0.003***	-0.004	-0.009	0.065***	0.016	0.024
	(12.72)	(2.72)	(-0.90)	(-1.27)	(6.10)	(0.78)	(1.16)
LEV	0.378***	0.039	-1.824***	-0.872***	-1.831***	-1.867***	-2.405***
	(27.02)	(1.19)	(-16.25)	(-2.94)	(-7.03)	(-3.70)	(-4.49)
Constant	5.952***	7.280***	-0.968***	-6.952***	21.938***	33.040***	32.469***
	(473.57)	(33.20)	(-9.59)	(-4.25)	(93.72)	(8.16)	(7.87)
Observations	119,616	119,616	119,616	119,616	119,616	119,616	98,882
Adjusted R-squared	0.012	0.447	0.009	0.158	0.013	0.136	0.123
Year-month FE	NO	YES	NO	YES	NO	YES	YES
Firm FE	NO	YES	NO	YES	NO	YES	YES
Industry clustered SE	NO	YES	NO	YES	NO	YES	YES

$$TEX_{i,t} = \beta_0 + \beta_1 \Delta DRET_{i,t-tlag} + \beta_2 BN_{i,t-tlag} + \beta_3 \Delta DRET_{i,t-tlag} \times BN_{i,t-tlag} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (3)$$

Table 4 Panel A presents the regression results of Equation (3). Column 1-6 and Column 7 show results of the full 8-K sample and of the subsample for TLAG>0, respectively. TEX represents a vector of textual properties that consists of number of words (NW), tone (TONE) and reporting time lag (TLAG). CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. Column 2, 4, 6 and 7 include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 4. Panel B: NITEM, N8K and TLAG 8-K

Dep. Vars.	(1) NITEM	(2) N8K_OL	(3) TLAG_OL
ΔDRET	0.232***	1.076***	-0.944***
	(4.74)	(6.73)	(-7.63)
BN	0.011	0.061	0.107***
	(1.28)	(1.43)	(3.82)
Sign Prediction	-	-	+
ΔDRET×BN	-0.337***	-1.358***	1.436***
	(-5.18)	(-6.43)	(8.75)
SIZE	0.002	0.103***	-0.160***
	(0.36)	(11.76)	(-29.57)
MTB	0.001	-0.011***	0.006***
	(1.06)	(-2.90)	(3.13)
LEV	0.060*	0.467***	0.100**
	(1.78)	(5.57)	(2.06)
/cut1		4.240***	-1.007***
		(69.28)	(-5.38)
/cut2		7.627***	-0.240***
		(74.25)	(-0.07)
/cut3		10.602***	0.349***
		(27.59)	(7.80)
/cut4			1.084***
			(23.74)
/cut5			3.102***
			(53.44)
Constant	1.393***		
	(16.78)		
Observations	119,616	119,616	40,700
Year-month FE	YES	NO	NO
Firm FE	YES	NO	NO
Industry clustered SE	YES	NO	NO
Pseudo R-squared		0.0056	0.0090
Adjusted R-squared	0.0950		

$$TEX_{i,t} = \beta_0 + \beta_1 \Delta DRET_{i,t-tlag} + \beta_2 BN_{i,t-tlag} + \beta_3 \Delta DRET_{i,t-tlag} \times BN_{i,t-tlag} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (3)$$

Table 4 Panel B presents the regression results of Equation (3), with TEX being NITEM (Column 1), N8K (Column 2) and TLAG (Column 3) respectively. CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). Column 1 presents the result of an ordinary least square (OLS) regression with firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. Column 2 and 3 present the results of ordered logistics models. See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 5: Narrative and Conditionl Conservatism

Dep. Vars.	NW		TONE		TLAG	
	(1)	(2)	(3)	(4)	(5)	(6)
CCONS.	LOW	HIGH	LOW	HIGH	LOW	HIGH
QRET	0.079**	0.030***	-0.176	-0.080	-0.110	-0.234**
	(2.49)	(3.92)	(-0.58)	(-0.76)	(-0.45)	(-2.49)
NEG	0.006	-0.008*	-0.119	-0.009	0.079	-0.046
	(0.72)	(-1.92)	(-1.64)	(0.14)	(1.33)	(-0.86)
Sign Prediction	-	-	+	+	+	+
QRET×NEG	-0.179***	-0.095***	2.982***	1.635***	-0.858**	-0.670***
	(-3.62)	(-6.42)	(6.36)	(7.99)	(-2.24)	(-3.68)
SIZE	0.021***	0.037***	0.667***	0.431***	-0.113**	-0.710***
	(3.42)	(13.78)	(11.35)	(11.50)	(-2.35)	(-21.29)
MTB	-0.007***	-0.001***	0.076***	0.027***	-0.049***	0.016***
	(-5.31)	(-2.49)	(5.99)	(4.61)	(-4.68)	(2.98)
LEV	0.354***	0.296***	-2.140***	-1.423***	2.110***	-0.321
	(10.40)	(15.58)	(-6.62)	(-5.43)	(8.00)	(-1.38)
Constant	8.708***	9.293***	-9.067***	-10.464***	42.773***	41.878***
	(51.02)	(269.44)	(-5.60)	(-22.01)	(32.38)	(99.04)
Diff. QRET×NEG	-0.084***		1.347***		-0.189	
	(-1.78)		(3.19)		(-0.56)	
Observations	38,063	38,062	38,063	38,062	38,063	38,062
Adjusted R-squared	0.590	0.838	0.553	0.699	0.653	0.621
Year-quarter FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

$$TEX_{i,t} = \beta_0 + \beta_1 QRET_{i,t} + \beta_2 NEG_{i,t} + \beta_3 QRET_{i,t} \times NEG_{i,t} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (1)$$

Table 5 presents the regression results of Equation (1) using subsamples with low (Column 1, 3 and 5) and high (Column 2, 4 and 6) conditional conservatism. TEX represents a vector of textual properties that consists of number of words (NW), tone (TONE) and reporting time lag (TLAG). CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. All regressions include firm and time fixed effects. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a Durbin–Wu–Hausman test.

Table 6: The Role of Narratives and Narrative Conservatism

Dep. Vars.	NW		TONE	
	(1)	(2)	(3)	(4)
Section	MDA	NOTE	MDA	NOTE
QRET	0.044***	0.043***	-0.180*	0.101
	(3.91)	(3.43)	(-1.82)	(0.65)
NEG	-0.003	-0.004	-0.094**	0.074
	(-0.61)	(-0.92)	(-2.03)	(1.18)
Sign Prediction	-	-	+	+
QRET×NEG	-0.189***	-0.159***	3.279***	1.976***
	(-8.71)	(-5.90)	(9.77)	(6.28)
SIZE	0.034***	0.013	0.847***	1.033***
	(5.03)	(1.28)	(8.03)	(7.77)
MTB	-0.003***	-0.004***	0.018*	0.052***
	(-4.31)	(-3.71)	(1.65)	(3.25)
LEV	0.245***	0.451***	-0.690	-1.855***
	(6.85)	(11.37)	(-1.63)	(-3.14)
Constant	6.870***	5.856***	-5.302***	-9.994***
	(58.27)	(49.31)	(-4.08)	(-6.74)
Diff. QRET×NEG	-0.030***		1.303***	
	(-3.56)		(7.38)	
Observations	79,547	79,547	79,547	79,547
Adjusted R-squared	0.724	0.806	0.535	0.545
Year-quarter FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry clustered SE	YES	YES	YES	YES

$$TEX_{i,t} = \beta_0 + \beta_1 QRET_{i,t} + \beta_2 NEG_{i,t} + \beta_3 QRET_{i,t} \times NEG_{i,t} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (1)$$

Table 6 presents the regression results of Equation (1) using subsamples with MD&A (Column 1 and 3) and note (Column 2 and 4) sections. TEX represents a vector of textual properties that consists of NW_MDA, NW_NOTE, TONE_MDA and TONE_NOTE. CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. All regressions include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test. ⋆⋆⋆, ⋆⋆ and ⋆ indicate significance at the 1%, 5% and 10% levels in a Durbin–Wu–Hausman test.

Table 7. Panel A: Narrative Conservatism in Voluntary and Mandatory Disclosure

Dep. Vars.	NW		TONE		TLAG	
	(1)	(2)	(3)	(4)	(5)	(6)
Disclosure Type	VD	MD	VD	MD	VD	MD
ΔDRET	0.128***	-0.036	-1.254**	-0.804	-15.657***	-6.524***
	(3.11)	(-0.32)	(-2.42)	(-0.64)	(-8.19)	(-4.39)
BN	0.011*	-0.004	-0.026	-0.093	0.425	0.147
	(1.70)	(-0.26)	(-0.39)	(-0.48)	(1.62)	(0.55)
Sign Prediction	-	-	+	+	+	+
ΔDRET×BN	-0.221***	0.003	2.826***	1.285	25.419***	9.365***
	(-3.88)	(0.03)	(3.15)	(0.98)	(9.36)	(5.45)
SIZE	-0.003	-0.021**	0.082	0.148	-0.626***	-0.045
	(-0.40)	(-2.07)	(1.46)	(1.62)	(-5.15)	(-0.29)
MTB	0.001	0.005***	-0.006	-0.007	0.001	0.036
	(1.01)	(3.15)	(-0.55)	(-0.43)	(0.04)	(1.42)
LEV	0.097**	-0.055	-1.064***	-0.665	-1.491**	-2.122*
	(2.43)	(-1.00)	(-3.48)	(-1.07)	(-2.47)	(-1.91)
Constant	6.807***	8.426***	-4.472**	-10.793***	30.618***	39.314***
	(34.90)	(15.03)	(-2.40)	(-2.65)	(6.25)	(4.36)
Diff. ΔDRET×NEG	-0.225***		1.541***		16.054***	
	(-3.07)		(1.78)		(11.33)	
Observations	84,113	35,503	84,113	35,503	84,113	35,503
Adjusted R-squared	0.464	0.522	0.196	0.158	0.140	0.178
Year-month FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Industry clustered SE	YES	YES	YES	YES	YES	YES

$$TEX_{i,t} = \beta_0 + \beta_1 \Delta DRET_{i,t-tlag} + \beta_2 BN_{i,t-tlag} + \beta_3 \Delta DRET_{i,t-tlag} \times BN_{i,t-tlag} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (3)$$

Table 7 Panel A presents the regression results of Equation (3) using voluntary (Columns 1, 3 and 5) and mandatory (Columns 2, 4 and 6) 8-K sample. TEX represents a vector of textual properties that consists of NW, TONE and TLAG. CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. All regressions include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a Durbin–Wu–Hausman test.

Table 7. Panel B: Narrative Conservatism in Voluntary and Mandatory 8-K Items

Dep. Vars.	NW		TONE		TLAG	
	(1)	(2)	(3)	(4)	(5)	(6)
Time Period	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
Item 1	0.120	0.593***	0.092	-4.302***	-1.204	1.596***
	(1.49)	(93.13)	(0.15)	(-43.87)	(-0.96)	(11.42)
Item 2	1.373***	**0.201*** **	-5.253***	**-0.728*** **	3.364***	**-0.049**
	(28.35)	**(36.37)**	(-14.96)	**(-8.77)**	(5.02)	**(-0.22)**
Item 3	0.687***	0.423***	1.651	-2.177***	4.413	-1.512***
	(3.45)	(39.65)	(1.18)	(-13.17)	(1.38)	(-4.30)
Item 4	0.018	0.819***	-6.211***	-11.772***	1.029	1.668***
	(0.30)	(55.40)	(-16.45)	(-36.82)	(1.13)	(3.07)
Item 5	**0.286*** **	0.449***	**-0.162**	-1.234***	**-1.935*** **	1.583***
	(8.34)	(84.25)	**(-0.67)**	(-14.01)	**(-3.27)**	(11.99)
Item 6	0.223	0.026	-7.449***	-0.126	-0.359	4.224
	(1.15)	(0.24)	(-4.47)	(-0.06)	(-0.11)	(0.75)
Item 7	0.376***	**0.286*** **	0.242	**-1.111*** **	-0.228	**-1.669*** **
	(14.63)	**(28.86)**	(1.21)	**(-10.54)**	(-0.59)	**(10.04)**
Item 8	-0.443***	**0.278*** **	3.785***	**-2.155*** **	1.468	**-1.695*** **
	(-3.13)	**(43.77)**	(5.69)	**(-19.29)**	(0.75)	**(5.82)**
Item 9	**0.300*** **	0.113***	**0.556** **	0.765***	**-2.432*** **	-1.093***
	(8.71)	(14.22)	**(2.47)**	(7.45)	**(-3.67)**	(-8.94)
Item 10	0.431*		-2.273		-0.564	
	(1.94)		(-0.69)		(-0.09)	
Item 11	0.165		-1.272		5.025	
	(1.28)		(-0.98)		(1.10)	
Item 12	**-1.255*** **		**6.438*** **		**-3.027***	
	(-13.62)		**(8.27)**		**(-1.93)**	
ΔDRET	-0.019	-0.014*	0.830**	0.126	-2.846***	-2.214***
	(-0.51)	(-1.75)	(2.52)	(0.83)	(-3.32)	(-3.84)
SIZE	-0.014	0.001	0.292**	0.029	-0.593*	-0.175*
	(-0.56)	(0.27)	(2.15)	(0.59)	(-1.84)	(-1.94)
MTB	0.007*	0.001	-0.006	0.005	0.141**	-0.032**
	(1.67)	(1.20)	(-0.25)	(0.72)	(2.34)	(-2.11)
LEV	0.038	0.021	-1.253*	-0.650**	-2.576*	-2.071***
	(0.34)	(0.95)	(-1.70)	(-2.19)	(-1.67)	(-4.07)
Constant	6.676***	5.243***	-7.525***	1.733**	33.222***	17.786***
	(27.41)	(99.05)	(-4.08)	(2.09)	(7.04)	(9.21)
Observations	26,799	92,807	26,799	92,807	26,799	92,807
Adjusted R-squared	0.566	0.480	0.213	0.197	0.145	0.095
Year-month FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Industry clustered SE	YES	YES	YES	YES	YES	YES

$$TEX_{i,t} = \beta_0 + \beta_j ITEMS_{i,t} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t}$$

Table 7 Panel B presents the regression results of the above equation using subsamples of 8-Ks filed before (Column 1 and 3, 5) and after (Column 2 and 4, 6) the 8-K reform on August 23 of 2004. TEX represents a vector of textual properties that consists of NW, TONE and TLAG. ITEMS denotes a vector of indicator variables for 8-K items. The items in bold are voluntary items. CONTROLS denotes a vector of control variables including change in daily returns (ΔDRET), firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. All regressions include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 8. Managerial Incentives and Narrative Conservatism

Dep. Vars.	NW		TONE		TLAG	
Panel A	(1)	(2)	(3)	(4)	(5)	(6)
Option Value	LOW	HIGH	LOW	HIGH	LOW	HIGH
QRET	0.041	0.104***	1.164***	0.545	-0.224	-0.151
	(0.98)	(2.66)	(3.48)	(1.38)	(-0.71)	(-0.54)
NEG	0.023	-0.003	-0.082	-0.132	0.095	-0.070
	(1.38)	(-0.26)	(-0.70)	(-1.01)	(0.97)	(-0.56)
QRET×NEG	-0.177**	-0.252***	1.615**	1.584**	-0.859	-0.693
	(-2.24)	(-4.44)	(2.57)	(2.55)	(-1.63)	(-1.51)
Diff. QRET×NEG	0.076***		0.030		-0.166	
	(2.02)		(0.14)		(-0.86)	
Observations	15,229	15,226	15,229	15,226	15,229	15,226
Adjusted R-squared	0.443	0.493	0.551	0.610	0.540	0.588
Panel B	(1)	(2)	(3)	(4)	(5)	(6)
SEO	NO	YES	NO	YES	NO	YES
QRET	0.060***	0.027	-0.222	0.060	-0.506***	-0.153
	(3.70)	(1.52)	(-1.32)	(0.41)	(-2.89)	(-0.79)
NEG	-0.002	-0.001	-0.104	-0.073	0.048	0.050
	(-0.25)	(-0.11)	(-1.56)	(-0.82)	(1.00)	(0.84)
QRET×NEG	-0.153***	-0.163***	2.448***	1.357***	-0.510*	-0.415
	(-5.33)	(-4.25)	(8.25)	(3.16)	(-1.73)	(-1.49)
Diff. QRET×NEG	0.009		1.091***		-0.095	
	(1.07)		(5.99)		(-0.59)	
Observations	45,490	37,054	45,490	37,054	45,490	37,054
Adjusted R-squared	0.696	0.687	0.552	0.623	0.634	0.674
Year-quarter FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Industry clustered SE	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

$$TEX_{i,t} = \beta_0 + \beta_1 QRET_{i,t} + \beta_2 NEG_{i,t} + \beta_3 QRET_{i,t} \times NEG_{i,t} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (1)$$

Table 8 Panel A presents the regression results of Equation (1) using subsamples with low (Column 1, 3 and 5) and high (Column 2, 4 and 6) Black-Scholes fair value stock options grants. Table 8 Panel B presents the regression results of Equation (1) using subsamples without (Column 1, 3 and 5) and with (Column 2, 4 and 6) seasoned equity offering. TEX represents a vector of textual properties that consists of NW, TONE and TLAG. CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. All regressions include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test. ⋆⋆⋆, ⋆⋆ and ⋆ indicate significance at the 1%, 5% and 10% levels in a Durbin–Wu–Hausman test.

Appendix

Appendix A: 10-Q and 8-K parsing

We develop a Python program to automatically parse, process and retrieve 10-K and 8-K filings from EDGAR database. Our algorithm consists of the following steps:

1. Download all quarterly master indexes from EDGAR using *python-edgar*[19] package.

2. Filter all 10-Q and 8-K filings[20] from EDGAR master index files and obtain url of the *filing detail* webpage[21] for each of the 10-Q and 8-K filings.

3. Extract (a) identification information[22] and (b) url of report in HTM/TXT format[23] from the *filing detail* webpage for each of the 10-Q and 8-K filings.

4. Parse and cleanse[24] all 10-Q and 8-K filings with url of HTM/TXT format report, using *beautiful soup*[25] package.

5. Save all clean 10-Q and 8-K filings to local device.

6. Perform word count on clean 10-Q and 8-K filings using LM dictionary.[26]

7. Calculate the Gunning fog index using *textstat*[27] package.

All Python scripts and data are available online via https://github.com/fengzhi22/narrative_conservatism.

Appendix B: Textual Variable Definition

Variable	Definition
NW	Number of words, defined as the natural logarithm of one plus the count of total words (nw)
nw	Raw count of total words
TONE	Tone, defined as the number of net positive words per thousand total words, calculated as the total number of positive words minus the sum of total number of negative words and the total number of negations, and multiply the previous result by one thousand
TLAG	Time lag, defined as the number of natural days elapsed between the news release date and the document filing date. In 10-Q sample, it is the number of natural days elapsed between the fiscal quarter-end date and the 10-Q filing date in EDGAR. In 8-K sample, it is the number of natural days elapsed between the 8-K filing date and its nearest news day, defined as a date whose change in daily return (ΔDRET) is three times larger than the firm's average change in daily return over the calendar year
READ	Gunning fog index, calculated as the average words per sentence plus the percent of complex words and multiply the sum by 0.4
ABTONE	Abnormal tone, calculated as the residual of the cross-sectional expected tone model (Equation 3)
N8K	Number of 8-K filings in one reporting period date
NITEM	Number of 8-K items in one reporting period date

[19] Python-edgar package documentation available at https://github.com/edouardswiac/python-edgar/blob/master/README.md

[20] Our analyses exclude amendments such as 10-Q/A and 8-K/A

[21] One example of filing detail webpage is available at https://www.sec.gov/Archives/edgar/data/320193/000032019320000050/0000320193-20-000050-index.html

[22] For example cik, accession number, reporting period, filing date and 8-K items etc.

[23] One example of report in HTM format is available at https://www.sec.gov/Archives/edgar/data/320193/000032019320000050/a8-kq220203282020.htm. We first search for url of main report in HTM format. If HTM format main report is not available, then we extract the url of TXT format full report. Each EDGAR filing can be accessed in three formats at maximum: regular text (*.txt), web pages (*.htm) and eXtensible Business Reporting Language, also known as XBRL (*.xml). Early filings in EDGAR are only in TXT format. Later filings extend to HTM format, and in 2009 SEC adopted the XBRL for all corporate filings (SEC, 2009). Therefore, current existing EDGAR filings all contain a TXT file, and depending on their filing date and company reporting policy they may or may not contain HTM or XML files. Normally all filings in XML format are also available in HTM format. We manually checked 100 random filings that are in XML format, and all of them are also available in HTM format with the same content. The TXT files usually contain not only the main report, but also all other additional filing materials (if any) such as graphics, exhibits and press release etc. However, the HTM files only contain the main report. We mainly focus on HTM files other than TXT files because the former naturally filters out less relevant information, and provides a cleaner textual content of the essential information. XML files are not parsed due to low tractability.

[24] Cleansing steps are: (a) delete nondisplay section; (b) delete all tables that contains more than 4 numbers; and (c) delete all HTML tags

[25] Beautiful soup package documentation available at https://www.crummy.com/software/BeautifulSoup/bs4/doc/

[26] LM dictionary available at https://sraf.nd.edu/textual-analysis/resources/#LM%20Sentiment%20Word%20Lists

[27] textstat package documentation available at https://github.com/shivam5992/textstat

Appendix C: Financial Variable Definition

Variable	Definition
EARN	Quarterly earnings, defined as quarterly earnings before extraordinary items (Compustat data item IBQ) scaled by beginning-of-quarter total assets (Compustat data item ATQ)
ΔEARN	Change in quarterly earnings, defined as current quarterly earnings minus one-quarter-lagged quarterly earnings
LEV	Leverage ratio, defined as beginning-of-quarter short term debt (Compustat data item DLCQ) plus beginning-of-quarter long term debt (Compustat data item DLTTQ) scaled by beginning-of-quarter total assets (Compustat data item ATQ)
MTB	Market-to-book ratio, defined as beginning-of-quarter market value of equity, calculated as common share price (Compustat data item PRCCQ) times common shares outstanding (Compustat data item CSHOQ) divided by beginning-of-quarter book value of equity (Compustat data item CEQQ)
SIZE	Firm size, defined as the natural logarithm of market value of equity, calculated as natural logarithm of common share price (Compustat data item PRCCQ) times common shares outstanding (Compustat data item CSHOQ)
QRET	Quarterly market-adjusted stock return, defined as buy-and-hold stock return (CRSP data item RET) over the fiscal quarter adjusted by the value-weighted stock return (CRSP data item VWRETD) over the same period
DRET	Daily market-adjusted stock return, defined as daily buy-and-hold stock return (CRSP data item RET) adjusted by the daily value-weighted stock return (CRSP data item VWRETD)
ΔDRET	Change in daily market-adjusted stock return (DRET), defined as current daily market-adjusted stock return minus one-day-lagged daily market-adjusted stock return
NEG	Indicator for negative quarterly return, which is set to 1 when market-adjusted stock return (QRET) is negative and 0 otherwise
BN	Indicator for daily bad news, which is set to 1 (0) if the negative (positive) change in daily market-adjusted stock return (ΔDRET) is three times larger than the firm's average decrease (increase) in daily return over the calendar year.
AF	Analyst forecast, defined as analysts' mean consensus forecast for one-year-ahead earnings per share, scaled by stock price per share at the end of the fiscal quarter (Compustat data item PRCCQ)
AFE	Analyst forecast error, defined as I/B/E/S earnings per share minus the median of the most recent analysts' forecasts, deflated by stock price per share at the end of the fiscal quarter (Compustat data item PRCCQ)
BUSSEG	Business segment, defined as the natural logarithm of one plus number of business segments, or one if item is missing from Compustat
GEOSEG	Geographical segment, defined as the natural logarithm of one plus number of geographical segments, or one if item is missing from Compustat
AGE	Firm age, defined as the natural logarithm of one plus number of days elapsed since the firm's first entry date in CRSP
STD_EARN	Standard deviation of quarterly earnings (EARN) over the last five quarters
STD_QRET	Standard deviation of monthly market-adjusted stock return over all months in the fiscal quarter
LOSS	Indicator for loss, which is set to 1 when quaterly earnings (EARN) is negative and 0 otherwise

Appendix D: 8-K Item List

8-K Item List Before 2004-08-23

Item 1	Changes in Control of Registrant
Item 2	Acquisition or Disposition of Assets
Item 3	Bankruptcy or Receivership
Item 4	Changes in Registrant's Certifying Accountant
Item 5	Other Events
Item 6	Resignation of Registrant's Directors
Item 7	Financial Statements and Exhibits
Item 8	Change in Fiscal Year
Item 9	Regulation FD Disclosure
Item 10	Amendments to the Registrant's Code of Ethics
Item 11	Temporary Suspension of Trading Under Registrant's Employee Benefit Plans
Item 12	Results of Operations and Financial Condition

8-K Item List After 2004-08-23 (included)

Section 1	**Registrant's Business and Operations**
Item 1.01	Entry into a Material Definitive Agreement
Item 1.02	Termination of a Material Definitive Agreement
Item 1.03	Bankruptcy or Receivership
Item 1.04	Mine Safety - Reporting of Shutdowns and Patterns of Violations
Section 2	**Financial Information**
Item 2.01	Completion of Acquisition or Disposition of Assets
Item 2.02	Results of Operations and Financial Condition
Item 2.03	Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant
Item 2.04	Triggering Events That Accelerate or Increase a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement
Item 2.05	Costs Associated with Exit or Disposal Activities
Item 2.06	Material Impairments
Section 3	**Securities and Trading Markets**
Item 3.01	Notice of Delisting or Failure to Satisfy a Continued Listing Rule or Standard; Transfer of Listing
Item 3.02	Unregistered Sales of Equity Securities
Item 3.03	Material Modification to Rights of Security Holders
Section 4	**Matters Related to Accountants and Financial Statements**
Item 4.01	Changes in Registrant's Certifying Accountant
Item 4.02	Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review
Section 5	**Corporate Governance and Management**
Item 5.01	Changes in Control of Registrant
Item 5.02	Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers
Item 5.03	Amendments to Articles of Incorporation or Bylaws; Change in Fiscal Year
Item 5.04	Temporary Suspension of Trading Under Registrant's Employee Benefit Plans
Item 5.05	Amendment to Registrant's Code of Ethics, or Waiver of a Provision of the Code of Ethics
Item 5.06	Change in Shell Company Status
Item 5.07	Submission of Matters to a Vote of Security Holders
Item 5.08	Shareholder Director Nominations
Section 6	**Asset-Backed Securities**
Item 6.01	ABS Informational and Computational Material
Item 6.02	Change of Servicer or Trustee
Item 6.03	Change in Credit Enhancement or Other External Support
Item 6.04	Failure to Make a Required Distribution
Item 6.05	Securities Act Updating Disclosure
Section 7	**Regulation FD**
Item 7.01	Regulation FD Disclosure
Section 8	**Other Events**
Item 8.01	Other Events
Section 9	**Financial Statements and Exhibits**
Item 9.01	Financial Statements and Exhibits

8-K item classification regimes before and after August 23 of 2004, adapted from SEC (2004).
Other Events, Regulation FD Disclosure and Results of Operations and Financial Condition are voluntary disclosure items.

Appendix E: 8-K Matching Cases

We check whether the 8-K filings are responses to their matched news releases, as proxied by dramatic market movements. First, we randomly pick 20 good and bad news events. Next, we read the 8-Ks matched to the news and check if the corporate events depicted in the 8-Ks are in line with the market movements both in terms of direction and magnitude. We find that the 8-K matching cases make economic sense overall. See selected 8-K matching cases below.

Good News

Case 1: Drug Test Results Announcement; TLAG = 2

Opexa Therapeutics, Inc. (CIK = 0001069308) experienced a significant rise in market-adjusted daily stock returns (ΔDRET = 2.67) on September 8 of 2009. On September 10 of 2009, the company filed an 8-K with ending reporting period on September 8 of 2009, which contained Item 8.01: Other Events and Item 9.01: Financial Statements and Exhibits. This 8-K stated that "On September 8, 2009, Opexa Therapeutics, Inc. (the 'Company') issued a press release reporting additional analyses of TERMS data for Tovaxin®, a personalized T-cell immunotherapy for multiple sclerosis (MS)".

Case 2: Sales of Equity Securities; TLAG = 6

MiddleBrook Pharmaceuticals, Inc. (CIK = 0001161924) experienced a significant rise in market-adjusted daily stock returns (ΔDRET = 1.43) on January 24 of 2008. On January 30 of 2008, the company filed an 8-K with ending reporting period on January 24 of 2008, which contained Item 1.01: Entry into a Material Definitive Agreement, Item 3.02: Unregistered Sales of Equity Securities and Item 9.01: Financial Statements and Exhibits. This 8-K stated that "On January 24, 2008, Middlebrook Pharmaceuticals, Inc. (the 'Company') entered into a Securities Purchase Agreement (the 'Securities Purchase Agreement') with selected accredited investors (the 'Investors'), to sell an aggregate of approximately 8,750,000 shares (the 'Shares') of the Company's common stock, par value $0.01 per share (the 'Common Stock'), and warrants to purchase an aggregate of approximately 3,500,000 shares of Common Stock (the 'Warrant Shares') at an exercise price of $3.00, subject to certain adjustments (the 'Warrants' and, together with the Shares, the 'Units'), at a price of $2.40 per Unit, resulting in gross proceeds to the Company of $21 million (the 'Offering')".

Case 3: Entry into an Agreement; TLAG = 6

SinoCoking Coal and Coke Chemical Industries, Inc. (CIK = 0001099290) experienced a significant rise in market-adjusted daily stock returns (ΔDRET = 1.38) on September 9 of 2014. On September 15 of 2014, the company filed an 8-K with ending reporting period on September 9 of 2014, which contained Item 8.01: Other Events and Item 9.01: Financial Statements and Exhibits. This 8-K included a press release, which stated that "SinoCoking Coal and Coke Chemical Industries, Inc. (Nasdaq:SCOK), a vertically-integrated coal and coke processor, today said it has signed an exclusive agreement with both the Institute of Process Engineering of the Chinese Academy of Sciences and the North China Institute of Science and Technology to refine and implement a technology that will be used, beginning next month, to convert the 21 million tons of coal at four SinoCoking underground mines into syngas, a clean burning fuel".

Case 4: Entry into a Material Definitive Agreement; TLAG = 8

E-Net, Inc. (CIK = 0001012481) experienced a significant rise in market-adjusted daily stock returns (ΔDRET = 1.19) on September 15 of 1999. On September 23 of 1999, the company filed an 8-Ks with ending reporting period on September 15 of 1999. The 8-K contained Item 5: Other events and Item 7: Financial statements and exhibits. The 8-K stated that "E-Net, Inc. (Nasdaq: ETEL) and IXC Communications, Inc. (Nasdaq: IIXC) have signed a definitive agreement to jointly develop and market the Internet Telephony services of e-Net's wholly owned subsidiary, ZeroPlus.com, Inc., to consumers and businesses around the world".

Case 5: Sales of Equity Securities; TLAG = 6

ReWalk Robotics Ltd. (CIK = 0001607962) experienced a significant rise in market-adjusted daily stock returns (ΔDRET = 1.19) on June 5 of 2019. On June 11 of 2019, the company filed an 8-K with ending reporting period on June 5 of 2019, which contained Item 1.01: Entry into a Material Definitive Agreement, Item 3.02: Unregistered Sales of Equity Securities, Item 8.01: Other Events and Item 9.01: Financial Statements and Exhibits. This 8-K stated that "On June 5, 2019 and June 6, 2019, ReWalk Robotics Ltd. (the 'Company') entered into warrant exercise agreements (the 'Exercise Agreements') with certain institutional investors (the 'Holders') of warrants to purchase the Company's ordinary shares (the 'Public Warrants'), par value NIS 0.25 per share (the 'Ordinary Shares'), previously issued in the Company's follow-on offering in November 2018, pursuant to which the Holders agreed to exercise in cash their Public Warrants to purchase an aggregate of 1,464,665 Ordinary Shares at the existing exercise price of $7.50 per share, for gross proceeds (before placement agent fees and expenses of approximately $1 million) to the Company of approximately $11 million".

Bad News

Case 1: Disposition of Assets; TLAG = 1

Media Services Group, Inc. (CIK = 0000014280) experienced a significant drop in market-adjusted daily stock returns (ΔDRET = -3.26) on April 13 of 2004. On April 14 of 2004, the company filed an 8-K with ending reporting period on the same day, which contained Item 2: Acquisition or disposition of assets. This 8-K stated that "On March 31, 2004, Media Services Group, Inc. (the 'Company') completed its sale of substantially all of the assets relating to its telemarketing sales and teleservices business held by its wholly-owned subsidiary, MKTG Teleservices, Inc. to SD&A Teleservices, Inc. ('SD&A'), a Georgia corporation and wholly-owned subsidiary of the Robert W. Woodruff Arts Center, Inc. for $3.3 million in cash plus the assumption of certain liabilities relating to such business, subject to a final working capital adjustment, pursuant to a definitive agreement entered into as of March 31, 2004".

Case 2: Termination of a Material Definitive Agreement; TLAG = 0

Ocean Power Technologies, Inc. (CIK = 0001378140) experienced a significant drop in market-adjusted daily stock returns (ΔDRET = -3.26) on June 2 of 2016. On June 2 of 2016, the company filed two 8-Ks with ending reporting period on the same day, which contained Item 1.02: Termination of a Material Definitive Agreement, Item 1.01: Entry into a Material Definitive Agreement and Item 9.01: Financial Statements and Exhibits. The first 8-K stated that "On June 2, 2016, Ocean Power Technologies, Inc. (the 'Company') and Rodman & Renshaw, a unit of H. C. Wainwright & Co., LLC (the 'Manager'), agreed to terminate the At the Market Offering Agreement (the 'Offering Agreement') dated October 19, 2015, as amended, between the Company and the Manager, relating to the offering and sale of shares of the Company's common stock, par value $0.001 per share, having an aggregate offering price of up to $2,906,836 from time to time through or to the Manager, in an 'at the market offering.' The termination of the Offering Agreement is effective immediately and the at the market offering program is no longer available for use by the Company".

Case 3: Departure of Directors or Certain Officers; TLAG = 0

Catuity Inc. (CIK = 0001109740) experienced a significant drop in market-adjusted daily stock returns (ΔDRET = -3.16) on June 22 of 2005. On June 22 of 2005, the company filed an 8-K with ending reporting period on the same day, which contained Item 5.02: Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers: Compensatory Arrangements of Certain Officers. This 8-K stated that "On Friday June 17, 2005 Catuity learned of the unfortunate and unexpected death of Mr. Alan L. Gilman, one of the Company's members of its Board of Directors. Mr. Gilman died of a heart attack despite having no history of heart trouble".

Case 4: Vote of Security Holders; TLAG = 4

Biostar Pharmaceuticals, Inc. (CIK = 0001418133) experienced a significant drop in market-adjusted daily stock returns (ΔDRET = -2.19) on June 9 of 2016. On June 13 of 2016, the company filed an 8-K with ending reporting period on June 9 of 2016, which contained Item 5.07: Submission of Matters to a Vote of Security Holders. This 8-K stated that "On June 9, 2016, Biostar Pharmaceuticals, Inc. (the 'Company') held its Annual Meeting of Shareholders at its executive offices in Xianyang City, Shaanxi Province, People's Republic of China. Set forth below are the matters voted upon at the meeting and the voting results. On the record date of April 13, 2016, there were 2,212,188 shares of the Company's common stock issued and outstanding. Proposal 1 (Election of Directors) - The shareholders elected Ronghua Wang, King-fai Leung, Haipeng Wu, Zhongyang Shang and Qinghua Liu as directors of the Company to hold office until the next annual meeting of shareholders and until their successors are duly elected. Proposal 2 (Ratification of Auditors) - The Company's shareholders voted to ratify the appointment of Mazars CPA Limited as the Company's independent registered public accounting firm for the year ending December 31, 2015 with 1,510,989 shares voting for and 25,326 shares voting against (15,431 shares abstaining)".

Case 5: Receiving a Request for Clarification from the Stock Exchange; TLAG = 3

My Size, Inc. (CIK = 0001211805) experienced a significant drop in market-adjusted daily stock returns (ΔDRET = -1.86) on February 14 of 2017. On February 17 of 2017, the company filed an 8-K with ending reporting period on February 14 of 2017, which contained Item 8.01: Other Events and Item 9.01: Financial Statements and Exhibits. This 8-K stated that "On February 14, 2017, the Company received a verbal request from the Tel Aviv Stock Exchange to clarify to the public the difficulties which hindered the possibility of transferring the Company's shares from market to market. In response to such request, the Company filed a report which contained the following statement..."

Online Appendix

Online Appendix. Table 1: Expected Tone

Dep. Vars.	(1) tone	(2) tone
EARN	0.0068***	0.0011**
	(7.84)	(2.47)
QRET	0.0001	0.0000
	(0.63)	(0.01)
SIZE	-0.0008***	-0.0002***
	(-50.78)	(-3.34)
MTB	0.0001***	-0.0013***
	(13.94)	(-4.52)
STD_QRET	-0.0064***	0.0690***
	(-17.00)	(7.58)
STD_EARN	-0.0206***	0.0000
	(-23.35)	(-0.05)
AGE	0.0004***	-0.0003
	(14.91)	(-1.63)
BUSSEG	0.0007***	-0.0006***
	(8.99)	(-4.44)
GEOSEG	-0.0009***	0.0002
	(-14.07)	(0.79)
LOSS	-0.0033***	-0.0013***
	(-42.51)	(-4.48)
ΔEARN	-0.0110***	-0.0012
	(-13.66)	(-1.19)
AFE	0.0060***	0.0008***
	(15.86)	(3.10)
AF	-0.0050***	-0.0001
	(-12.21)	(-0.30)
Constant	-0.0049***	0.0057***
	(-22.39)	(7.02)
Observations	91,607	14,475
Adjusted R-squared	8.56%	4.41%
Year-quarter FE	NO	NO
Firm FE	NO	NO
Industry clustered SE	NO	NO

$$
\begin{aligned}
tone_{i,t} = \beta_0 &+ \beta_1 EARN_{i,t} + \beta_2 RET_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 MTB_{i,t} + \beta_5 STD\_EARN_{i,t} \\
&+ \beta_6 STD\_RET_{i,t} + \beta_7 AGE_{i,t} + \beta_8 BUSSEG_{i,t} + \beta_9 GEOSEG_{i,t} + \beta_{10} LOSS_{i,t} \\
&+ \beta_{11} \Delta EARN_{i,t} + \beta_{12} AFE_{i,t} + \beta_{13} AF_{i,t} + \epsilon_{i,t}
\end{aligned}
$$

Online Appendix Table 1 presents regression results of the above Equation (Column 1) in comparison with the expected tone model results in Huang et al. (2014) (Column 2). Dependent variable $tone_{i,t}$ is defined as net positive words, and is calculated as total number of positive words minus the sum of total number of negative words and total number of negations, deflated by total words. Independent variables are defined in Appendix C. All financial variables except returns are winsorized at 1% and 99% level. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test. The coefficient of MTB in Column 1 is consistent with that in Column 2 in terms of sign, because Huang et al. (2014) use book-to-market ratio instead of market-to-book ratio in the expected tone model.

Online Appendix. Table 2: Main Results 8-K (Restricted Sample)

Dep. Vars.	(1) NW	(2) NW	(3) TONE	(4) TONE	(5) TLAG	(6) TLAG
ΔDRET	0.448***	0.163***	-2.159***	-0.900	-0.533***	-0.882***
	(11.10)	(2.86)	(-6.04)	(-1.36)	(-6.66)	(-5.78)
BN	0.016	0.007	-0.154*	-0.056	0.087***	0.081***
	(1.56)	(0.74)	(-1.70)	(-0.59)	(4.30)	(3.29)
Sign Prediction	-	-	+	+	+	+
ΔDRET×BN	-0.803***	-0.266***	4.500***	2.637**	0.839***	1.555***
	(-14.37)	(-2.96)	(9.09)	(2.00)	(7.58)	(6.37)
SIZE	0.022***	-0.006	0.079***	0.094	-0.104***	-0.051***
	(10.76)	(-0.88)	(4.44)	(1.42)	(-26.18)	(-3.51)
MTB	0.002***	0.001	-0.003	-0.026*	0.004***	-0.001
	(3.18)	(1.00)	(-0.51)	(-1.84)	(2.73)	(-0.33)
LEV	0.339***	0.065	-1.703***	-0.789**	0.082**	-0.027
	(18.02)	(1.22)	(-10.23)	(-2.00)	(2.20)	(-0.31)
Constant	5.650***	6.938***	0.700***	-5.541	1.798***	1.934***
	(346.54)	(12.47)	(4.85)	(-1.03)	(55.73)	(4.78)
Observations	40,700	40,700	40,700	40,700	40,700	40,700
Adjusted R-squared	0.016	0.424	0.006	0.196	0.019	0.141
Year-month FE	NO	YES	NO	YES	NO	YES
Firm FE	NO	YES	NO	YES	NO	YES
Industry clustered SE	NO	YES	NO	YES	NO	YES

$$TEX_{i,t} = \beta_0 + \beta_1 \Delta DRET_{i,t-tlag} + \beta_2 BN_{i,t-tlag} + \beta_3 \Delta DRET_{i,t-tlag} \times BN_{i,t-tlag} + \beta_n CONTROLS_{i,t} + \epsilon_{i,t} \quad (3)$$

Online Appendix Table 2 presents regression results of Equation (3) using restricted 8-K sample. All observations in restricted 8-K sample are subject to four (five) business day 8-K reporting deadline after (before) August 23 of 2004. TEX represents a vector of textual properties that consists of number of words (NW), tone (TONE) and reporting time lag (TLAG). CONTROLS denotes a vector of control variables including firm size (SIZE), market-to-book ratio (MTB) and leverage ratio (LEV). See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level. Column 2, 4 and 6 include firm and time fixed effects and standard errors are clustered at industry level identified by 4-digit SIC codes. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Online Appendix. Table 3.
Panel A: Mean of Coefficients and Standard Errors from Fiscal Yearly Regressions

Indep. Vars.	Prediction	Coeff.	S.E.	t-stats
Intercept		-0.032	0.008	-3.96
NEG		0.006	0.013	0.48
RET	(+)	-0.083	0.029	-2.81
RET×SIZE	(+)	0.012	0.006	2.07
RET×MTB	(-)	-0.009	0.003	-3.00
RET×LEV	(-)	0.074	0.048	1.55
RET×NEG	(+)	0.299	0.058	5.12
RET×NEG×SIZE	(-)	-0.035	0.010	-3.40
RET×NEG×MTB	(+)	0.014	0.005	2.82
RET×NEG×LEV	(+)	-0.198	0.089	-2.22
SIZE		0.007	0.001	5.15
MTB		-0.001	0.001	-1.71
LEV		-0.006	0.013	-0.44
NEG×SIZE		-0.001	0.002	-0.45
NEG×MTB		0.000	0.001	0.00
NEG×LEV		0.004	0.020	0.19

Panel B: Summary Statistics of C_SCORE and G_SCORE

	mean	median	std. dev	max	min	p1	p25	p75	p99
C_SCORE	0.091	0.088	0.116	1.170	-0.674	-0.183	0.028	0.146	0.441
G_SCORE	-0.019	-0.017	0.063	0.499	-0.707	-0.236	-0.040	0.008	0.150

$$
\begin{aligned}
EARN_{i,t} = {} & \beta_0 + \beta_1 NEG_{i,t} + \beta_2 RET_{i,t} \\
& + \beta_3 RET_{i,t} \times SIZE_{i,t} + \beta_4 RET_{i,t} \times MTB_{i,t} + \beta_5 RET_{i,t} \times LEV_{i,t} + \beta_6 RET_{i,t} \times NEG_{i,t} \\
& + \beta_7 RET_{i,t} \times NEG_{i,t} \times SIZE_{i,t} + \beta_8 RET_{i,t} \times NEG_{i,t} \times MTB_{i,t} + \beta_9 RET_{i,t} \times NEG_{i,t} \times LEV_{i,t} \\
& + \beta_{10} SIZE_{i,t} + \beta_{11} MTB_{i,t} + \beta_{12} LEV_{i,t} \\
& + \beta_{13} NEG_{i,t} \times SIZE_{i,t} + \beta_{14} NEG_{i,t} \times MTB_{i,t} + \beta_{15} NEG_{i,t} \times LEV_{i,t} + \epsilon_{i,t}
\end{aligned} \tag{4}
$$

$$
C\_SCORE_{i,t} = \beta_6 + \beta_7 SIZE_{i,t} + \beta_8 MTB_{i,t} + \beta_9 LEV_{i,t} \tag{5}
$$

$$
G\_SCORE_{i,t} = \beta_2 + \beta_3 SIZE_{i,t} + \beta_4 MTB_{i,t} + \beta_5 LEV_{i,t} \tag{6}
$$

Online Appendix Table 3 illustrates the key statistics in constructing C_SCORE and G_SCORE. Panel A presents the mean of coefficients, the mean of standard errors and the t-statistics obtained from 28 fiscal yearly regressions (Equation 4) using 10-Q sample from 1993 to 2020. C_SCORE and G_SCORE are calculated following Equation 5 and Equation 6 respectively. Panel B presents the summary statistics of C_SCORE and G_SCORE. See Appendix B and Appendix C for textual and financial variable definitions. All financial variables except returns are winsorized at 1% and 99% level.