The Effect of Investor Inattention on Voluntary Disclosure

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ABSTRACT

We employ a shock to institutional investor attention to examine whether investor inattention influences firms' propensity to provide voluntary disclosures and the characteristics of their voluntary disclosures. Using management forecasts, non-GAAP earnings, and conference calls, we find that firms are less likely to provide voluntary disclosures when investors are less attentive. This effect is attributable to quasi-indexing institutions, which prior literature has established as the primary group that influences firm disclosures. We also find that firms' voluntary disclosures are more precise, less aggressive, and contain less content when investors are less attentive. Our study complements prior research that has investigated the capital market consequences of investor inattention by showing how investor attention also shapes firms' voluntary disclosure policies.

Key words: Voluntary disclosure, investor attention, institutional investors

JEL Classifications: M40, M41, G20, G23

1 Introduction

We examine whether and how inattention by the firm's shareholders influences the provision of voluntary disclosure. Recent studies examine the role of investor inattention on disclosure by investigating whether firms strategically time the release of mandatory disclosures such as earnings announcements (e.g., deHaan, Shevlin, and Thornock 2015; Niessner 2015; Segal and Segal 2016). Understanding whether and how investor inattention influences the provision of voluntary disclosure is important because these disclosures are a key mechanism by which managers can inform the market, reduce information asymmetry, and lower the cost of monitoring the firm (Beyer, Cohen, Lys, and Walther 2010). In addition, by documenting the relation between investor inattention and voluntary disclosure, we provide insights into how inattention affects capital markets and corporate actions (Kempf, Manconi, and Spalt 2016; Jung, Naughton, Wang and Tahoun 2017; Madsen 2017).

There are two empirical challenges associated with our research question. First, any association between firms' disclosure policies and investor attention is likely endogenous. For example, firm fundamentals may jointly influence the level of investor attention and firms' disclosure policies. Further, disclosures may attract attention, which raises the concern of reverse causality. Second, examining voluntary disclosure decisions requires a long-term measure of investor inattention that differs from the proxies used in the literature investigating how inattention affects the timing of mandatory disclosures, because those studies generally focus on short time intervals. For example, prior studies have relied on the assumption that investor attention is low on Fridays (DellaVigna and Pollet 2009), after market hours (deHaan et al. 2015; Segal and Segal 2016), and on days when there is competing contemporaneous news (Hirshleifer et al. 2009) or attention grabbing events (Drake, Gee, and Thornock 2016).

To mitigate these empirical concerns, we use a quasi-experimental setting to generate a shock to investor attention that is unrelated to the firms' voluntary disclosure policies and provides a firm-quarter measure of investor inattention. More specifically, we calculate a plausibly exogenous measure of investor distraction based on the portfolio holdings of institutional investors following Kempf et al. (2016).[1] The logic behind the measure is that if a firm's institutional investors have large holdings in other industries that are experiencing extreme returns, the institutional investors are less attentive to the firm. Because the level of attention is contingent on investment holdings in industries other than the firm's industry and the economic shocks in these other industries, the inattention is plausibly exogenous to a given firm.[2]

To examine the effect of investor attention on voluntary disclosure policy, we test the association between this firm-quarter measure of investor distraction and the frequency and characteristics (precision, aggressiveness, and quantity) of three common forms of voluntary disclosure: management forecasts, non-GAAP disclosures, and conference calls. We examine these disclosures for three reasons. First, each disclosure method is informative to investors (Frankel, Johnson, and Skinner 1999; Bhattacharya, Black, Christensen, and Larson 2003; Beyer et al. 2010), and examining all three allows us to speak more comprehensively about the effects of inattention on firm voluntary disclosure policy. Second, managers have different incentives with respect to different disclosure types, and therefore the effect of inattention on voluntary disclosure may vary depending on the form of disclosure.[3] Third, different disclosures allow us

[1] Some studies refer to investor inattention, while others refer to distraction. We use both terms interchangeably.
[2] We discuss the validity of this measure as a proxy for inattention in more detail in Section 4.2.
[3] For example, if investors are inattentive, managers may cease forecasting to reduce the pressure to meet future earnings targets. In contrast, non-GAAP earnings do not create this same pressure on managers for future performance because they are contemporaneous as opposed to forward-looking. Thus, managers may increase aggressive non-GAAP earnings disclosures because inattentive investors are less likely to unravel the opportunistic component of such disclosures (Hirshleifer and Teoh 2003).

to examine different characteristics of disclosure (e.g., non-GAAP earnings are ideal for testing the aggressiveness of disclosures, but not the precision).

We expect that inattention may affect voluntary disclosure for four reasons. First, distracted investors may have decreased demand for firm disclosure because they are paying less attention to the firm. Consistent with this proposition, Kempf et al. (2016) find that distracted shareholders are weaker monitors of firms. Further, Peng and Xiong (2006) develop a model of investor attention and find that limited attention results in investors relying more on market and sector-wide information rather than firm-specific information. Thus, firms may provide less voluntary disclosure when demand is low to avoid the costs of disclosure (Beyer et al. 2010). Second, firms with more distracted investors may face less pressure to report good news which could affect their voluntary disclosure decisions. This logic is consistent with firms providing mandatory disclosures containing bad news when attention is low (Patell and Wolfson 1982; deHaan et al. 2015; Segal and Segal 2016).

Third, in contrast to the prior discussion, inattentive investors may demand forms of disclosure they can more easily process due to their lack of time or resources to gather information about the firm on their own (Hirshleifer and Teoh 2003). Voluntary disclosures such as management forecasts, non-GAAP disclosures, or conference calls may offer a low cost means by which inattentive investors can remain informed. Last, given the capital market benefits of investor attention (Barber and Odean 2008; Engelberg and Parsons 2011), firms may use voluntary disclosures to attract attention when it would otherwise be low. Evidence suggests that the dissemination of firm information attracts investor attention (Lou 2014; Blankespoor, deHaan, and Zhu 2017; Jung et al. 2017). Thus, addressing whether and how changes in institutional investor attention affect voluntary disclosure requires empirical analysis.

We first examine whether firms are more or less likely to provide voluntary disclosure when investors are distracted. The results show that distraction is negatively associated with the likelihood of providing voluntary disclosures. Firms are significantly less likely to provide management guidance when distraction is higher. The relation between providing a non-GAAP disclosure and investor distraction is negative in all specifications as well, with statistical significance in all but one specification. The relation between holding a conference call and investor distraction is typically negative, but is significant in only one specification.[4] Overall, our results indicate that firms are less likely to provide voluntary disclosures when investors are distracted.

Because prior studies suggest that various types of institutional investors may have different disclosure preferences (Boone and White 2015), we also examine whether the relation between distraction and voluntary disclosure varies with the type of institutional investor that is distracted. As argued by Boone and White (2015), relative to other institutional investors, quasi-indexers are expected to have the strongest preference for firm disclosure for two reasons. First, they rely less on private information because their diverse holdings make private information gathering for firms in their portfolio costlier and their tracking strategies diminish their ability to take advantage of private information. Second, they demand firm transparency because information asymmetry increases their transaction and monitoring costs. Our results indicate that the negative association between distraction and disclosure is largely attributable to the distraction of quasi-indexer investors, rather than transient or dedicated investors (Bushee and Noe 2000). These results are consistent with the prior studies showing that quasi-indexer

[4] We note that the power of this test is relatively low due to little variation in the dependent variable (67% of quarters in our sample have a conference call and there is significant serial correlation within firms). Further, although the negative relation between the likelihood of holding a conference call and investor attention is not as statistically significant, we find that the word count in conference calls is significantly lower when investors are distracted.

investors prefer more disclosure, make their disclosure demands known, and firms cater to these demands (Boone and White 2015).[5]

We next examine several voluntary disclosure characteristics that relate to the precision, aggressiveness, and quantity of disclosure. Our results suggest that when investors are distracted, firms provide voluntary disclosures that are more precise, less aggressive, and smaller in quantity. With regards to precision, management is more likely to provide guidance that is a point estimate rather than a range, forecasts with shorter time horizons, and estimates with more narrow ranges. In exploring aggressiveness, non-GAAP disclosures contain fewer expense exclusions (resulting in lower non-GAAP earnings), are less likely to be used to beat benchmarks, and are less likely to be emphasized. We also find that the tone of conference calls is less positive. Our examination of the quantity of disclosure indicates that firms provide less guidance (fewer forecasts throughout the quarter) and conference calls are shorter in length. The results are consistent with investor distraction leading to decreased demand for general disclosure, more demand for disclosure that is easy to process, and decreased pressure on management to report aggressively.

We make several contributions. First, to the best of our knowledge, this study is one of the first to examine whether investor inattention is associated with firms' voluntary disclosure policies.[6] While there is a substantial literature examining the effects of investor inattention, this research has largely focused on capital market consequences. Instead of investigating the effect of inattention on *when* firms disclose (Patell and Wolfson 1982; deHaan et al. 2015), we examine

[5] In additional analyses, we also find evidence that the effect of distraction on the propensity to provide disclosure is strongest for firms with high institutional ownership and high analyst coverage.

[6] We are aware of two recently published studies examining attention and voluntary disclosure. Miao, Teoh, and Zhu (2016) examine whether increased attention from the voluntary disclosure of a statement of cash flows with affects the pricing of accruals. Segal and Segal (2016) examine whether managers strategically time and bundle the release of bad news, but they investigate the timing of non-earnings 8-Ks, some of which include voluntary disclosures.

the effect of inattention on the *content* of firms' disclosures. By examining the effect of investor inattention on the frequency and characteristics of voluntary disclosure, we address the effect of limited attention on corporate actions which has largely been unexplored (Baker and Wurgler 2012; Kempf et al. 2016). Our results indicate that not only does investor attention affect the way investors process firm disclosures as documented in prior studies, but it also affects the type of information and disclosures that firms provide. This evidence suggests that the capital market consequences of investor attention may be more far reaching than previously thought.

Second, we add to the literature examining the relation between institutional investors and disclosure. Prior studies find that the level of institutional ownership is positively associated with the likelihood and accuracy of voluntary forecasts (Ajinkya et al. 2005; Boone and White 2015). Unlike prior studies which typically examine how the level of institutional ownership affects disclosure (Ajinkya et al. 2005), we examine how the distraction of institutional owners affects disclosure. This distinction potentially provides a finer measure of institutional investors' influence on firms' disclosure policies. For example, even if institutional ownership is high, the typical effect of institutional investors on disclosure may not occur if the investors are distracted. Consistent with this assertion, we find some evidence that firms with a higher percentage of institutional shareholders experience a greater decrease in voluntary disclosure when investors are distracted. Further, using a plausibly exogenous measure of institutional attention helps us address the naturally endogenous relation between institutional ownership and firm disclosure (Beyer et al. 2010).

Third, we add to the literature on the determinants of voluntary disclosure, which has garnered significant interest from both theoretical and empirical researchers, by examining a largely unexplored determinant of voluntary disclosure: investor inattention (Beyer et al. 2010).

While there has been some theoretical work examining the relation between investor inattention and voluntary disclosure (Hirshleifer and Teoh 2003), empirical research is limited. Because we examine three distinct voluntary disclosure types, we also add to the different literatures examining the determinants of the frequency and characteristics of management guidance, non-GAAP reporting, and conference calls.

The remainder of the paper is organized as follows. Section 2 details the background literature. Section 3 develops our hypotheses regarding the expected relation between institutional inattention and voluntary disclosures. Section 4 outlines our sample and research design. Section 5 discusses our results. Section 6 concludes.

2 Background literature

2.1 Voluntary disclosure

While several theoretical studies suggest that firms will voluntarily disclose all their private information if certain conditions are met (Grossman and Hart 1980; Milgrom 1981; Milgrom and Roberts 1986), these conditions do not hold in practice. Accordingly, there is a large literature examining the determinants of firms' voluntary disclosure (Healy and Palepu 2001; Beyer et al. 2010). Related to our question, several studies examine how a firm's investor base can influence its disclosure decisions. For example, Healy, Hutton, and Palepu (1999) and Bushee and Noe (2000) report that increases in institutional ownership are associated with increases in voluntary disclosure quality possibly because of the pressure institutional owners

exert on managers. Likewise, Ajinkya et al. (2005) find that firms with greater institutional ownership are more likely to issue management forecasts and forecast more frequently.[7]

However, as highlighted by Beyer et al. (2010) and Healy and Palepu (2001), endogeneity is a clear issue in this line of research. Specifically, it is challenging to disentangle whether institutional investors choose to invest in firms with better disclosure or if institutional investors cause firms to improve their disclosure. Boone and White (2015) attempt to identify a causal relation between institutional ownership and disclosure by taking advantage of the annual reconstitution of the Russell 1000 and 2000 indices as a shock to institutional ownership. They find evidence that quasi-indexer investors cause increases in voluntary disclosure. Boone and White (2015) argue that, relative to transient or dedicated investors, quasi-indexers have stronger preferences for greater firm transparency and enhanced public information production.[8]

We examine three forms of voluntary disclosure that have garnered significant interest in the literature: management forecasts, non-GAAP disclosures, and conference calls.[9] While prior studies find that each of these forms of voluntary disclosure are informative to investors, there are differences as to the information they provide to investors, the manner in which they are presented, and the costs firms incur by providing them.[10] As one example of these differences,

[7] Like these prior studies, we focus on institutional shareholders rather than all shareholders for three reasons. First, institutions are a large and important part of the market, holding greater than 70% of the common shares of NYSE/NASDAQ/AMEX stocks as of 2012 (Kempf et al. 2016). Second, institutions have the opportunity to interact with management to make their disclosure demands known (Bushee, Carter, and Gerakos 2013; Green, Jame, Markov, and Subasi 2014), whereas disclosure demand from retail investors is likely more opaque to managers. Third, evidence suggests institutions prefer greater firm disclosure; the level of institutional ownership is positively associated with the likelihood of issuing voluntary forecasts and the accuracy of those forecasts (Ajinkya, Bhojraj, and Sengupta 2005; Boone and White 2015).

[8] See Section 5.2 for further discussion.

[9] Beyer et al. (2010) provides discussion of all three forms of voluntary disclosure. More specific discussions of the management guidance and non-GAAP literatures can be found in Hirst, Koonce, and Venkataraman (2008) and Black, Christensen, Ciesielski, and Whipple (2017), respectively.

[10] For example, Beyer et al. (2010) find that management forecasts account for a significant amount of a firm's quarterly return variance. Several studies find evidence that non-GAAP earnings are more informative to investors than are GAAP earnings (Bradshaw and Sloan 2002; Bhattacharya, Black, Christensen, and Larson 2003). There is

non-GAAP disclosures present past results, whereas management forecasts are projections of future performance. Due to this difference, it is costlier to provide non-GAAP disclosures from a litigation perspective because they do not have the same safe harbor protection from shareholder lawsuits that management forecasts enjoy (Cazier, Christensen, Merkley, and Treu 2017). We choose to examine all three to provide a more comprehensive view of the effects of investor attention on voluntary disclosure. We contribute to the voluntary disclosure literature by examining a relatively unstudied determinant of voluntary disclosure (investor attention), using a plausibly exogenous shock that allows us to better identify a causal relation between institutional ownership and voluntary disclosure.

2.2 Investor attention

Recent literature in behavioral corporate finance recognizes that investors face attention constraints. Barber and Odean (2008) document that individual investors are more likely to buy attention grabbing stocks, e.g., those that have been featured in the news, have abnormally high volume, or extreme one day returns. Individuals must search thousands of stocks when considering what to buy, and attention grabbing stocks help narrow the search process. Engelberg and Parsons (2011) find similar evidence, namely that local media coverage predicts local trading. Yuan (2015) finds that market-wide attention-grabbing events lead investors to sell their holdings when the market is high.

Given investors experience attention constraints, the literature has focused on the effects of these constraints on capital markets. Hirshleifer et al. (2009) and DellaVigna and Pollet (2009) both find the market underreacts to earnings news when inattention is high, as proxied by the number of contemporaneous earnings announcements and Friday announcements, respectively.

evidence that conference calls contain information relevant to investors (Frankel et al. 1999) and decrease information asymmetry (Brown, Hillegeist, and Lo 2004).

This inattention subsequently leads to greater post-announcement drift. Likewise, Cohen and Frazzini (2008) document that when investors are attention-constrained, economically linked firms are slow to incorporate news into each other's stock prices, leading to predictable returns. Andrei and Hasler (2015) find attention is positively associated with the volatility of returns as well. Overall, inattention leads to less efficient and less volatile stock prices.

Recent research has moved beyond the capital market consequences of inattention to examine how investor inattention affects corporate actions, namely the timing and dissemination of mandatory disclosures by management. Prior research suggests managers try to hide bad news by releasing earnings when attention is low, such as after hours or on Fridays (Patell and Wolfson 1982; Niessner 2015). While Doyle and Magilke (2009) do not find evidence of the strategic timing of announcements, deHaan et al. (2015) provide evidence that managers release bad news when they expect attention to be low, such as on busy announcement days, on Friday evenings, and with less notice. Firms are also less likely to disseminate their earnings news through Twitter when disclosing bad news (Jung et al. 2017). While the prior literature largely focuses on how inattention affects *when* firms choose to make mandatory disclosures, we examine whether inattention changes the *content* that they choose to voluntarily disclose.[11]

3 Hypothesis development

There are several reasons why investor inattention may affect voluntary disclosure. Prior literature finds evidence that institutional owners prefer greater disclosure. Ajinkya et al. (2005) examine institutional ownership and management forecasts, finding higher institutional ownership is associated with more management forecasts. Boone and White (2015) confirm this

[11] We note a concurrent working paper examines investor inattention and the disclosure of management forecasts and 8-Ks, finding a negative relation consistent with our findings (Abramova, Core, and Sutherland 2017).

result using additions and deletions from the Russell 1000/2000 indices as exogenous shocks to institutional ownership. They find that when an index change increases a firm's institutional ownership, firms issue more management forecasts and 8-Ks. If institutions demand greater disclosure, then distraction may reduce that demand because investors are paying less attention to the firm. This thinking is consistent with the results in Kempf et al. (2016) who find evidence that firms experience looser monitoring when shareholders are distracted. Consistent with distracted investors demanding less firm disclosure, Peng and Xiong (2006) develop a model of investor attention allocation and find that limited investor attention results in investors relying more on market and sector-wide information rather than firm-specific information. Firms face several costs by providing voluntary disclosure, including the costs of making the disclosure, the cost of disclosing proprietary information, and litigation costs (Beyer et al. 2010). Because voluntary disclosure is not costless, firms may choose to provide less disclosure if investor demand for disclosure decreases due to distraction.

Alternatively, distracted investors may have increased demand for forms of disclosure they can more easily process due to their lack of time or resources to gather information about the firm on their own (Hirshleifer and Teoh 2003). When institutions are not distracted, they may have other means of acquiring non-public information such as through broker-hosted investor conferences (Green et al. 2014). Opportunities for private information acquisition may increase institutional trading profits when institutions have the resources to acquire such information.[12] However, if institutions are distracted, the cost of such information acquisition may be higher and no longer viable. In these cases, institutions may prefer public disclosures, such as forecasts, non-GAAP disclosures, or conference calls, which offer a lower cost means by which inattentive investors can remain informed and monitor management (Easley and O'Hara 2004).

[12] Bushee et al. (2003) find that institutions do not unambiguously prefer public disclosure.

Last, given the capital market benefits of investor attention (Barber and Odean 2008; Cohen and Frazzini 2008; Hirshleifer et al. 2009; Englelberg and Parsons 2011), firms may attempt to use voluntary disclosure to attract attention when investor attention would otherwise be low. Blankespoor et al. (2014) document that firms who disseminate their disclosures through Twitter to increase attention to the disclosure see improved spreads and liquidity. Firms also use advertising to attract investor attention and increase short-run prices prior to insider sales or improve liquidity (Lou 2014; Madsen and Niessner 2017). It is feasible that managers could similarly use voluntary disclosures to attract attention to improve pricing or liquidity.

Given the competing hypotheses, determining whether investor attention affects firms' propensity to provide voluntary disclosure requires empirical analysis.[13] Accordingly, we present our first hypothesis in the null form:

H1 (null): *Investor distraction has no effect on the likelihood of managers issuing voluntary disclosures.*

While our first hypothesis examines how distraction affects managers' propensity to provide voluntary disclosures, distraction may also affect the characteristics of those disclosures that are issued. We consider three broad attributes of disclosure: precision, aggressiveness, and quantity. Regarding precision, Ajinkya et al. (2005) find voluntary forecasts are more specific when institutional ownership is high. Similar to the previous discussion, it is not clear whether distraction will result in lower demand for precision, or whether distracted institutions will demand even more precision because it further lowers the cost of information acquisition.

[13] A necessary condition for inattention to affect disclosure is that managers are aware that their investors are inattentive. Evidence suggests managers communicate with their own IR departments and investors directly with some frequency (Kempf et al. 2016). We believe inattention could be communicated to management through multiple channels, including the firm's IR department, fewer phone calls or meetings with investors, less news coverage, reduced participation in conference calls, reduced attendance at investor conferences, or observing distracting events in other industries. Kempf et al. (2016) validate our empirical measure of distraction (see Section 4.2 for further discussion) and find distraction is associated with fewer conference call participants and fewer shareholder proposals at meetings. As such, we consider it likely that managers observe investor distraction.

Moreover, evidence suggests managers alter the precision of their disclosures in response to the expected market reaction (Li and Zhang 2015). If inattention leads to incomplete pricing of disclosures (DellaVigna and Pollet 2009; Hirshleifer et al. 2009), then managers may change the precision of the information they disclose.

Regarding aggressiveness, Hirshleifer and Teoh (2003) predict that lower attention will lead to more aggressive non-GAAP disclosures, as investors will be less likely to tease out the biased component of the disclosures.[14] This theory is consistent with distraction leading to reduced monitoring of management (Kempf et al. 2016). On the other hand, firms face pressure from their investors to report good news (Graham, Harvey, and Rajgopal 2005). If inattention reduces this pressure, it may lead to less aggressive disclosures because there are costs (e.g. litigation costs) related to providing aggressive disclosures (Beyer et al. 2010).

Beyond the decision to disclose or not, we also consider the quantity of voluntary disclosures. Conditional on disclosing, firms can forecast multiple periods, multiple metrics, or vary the length of their conference calls. The forces affecting the association between distraction and the quantity of disclosure are likely similar to the decision of whether to disclose or not. Distraction could lead to greater or less demand for the quantity of disclosures, or managers may disclose more to attract attention when it is low. We present a single hypothesis on the association between distraction and disclosure characteristics in the null form:

H2 (null): *Investor distraction has no effect on the characteristics of voluntary disclosures issued by management.*

[14] We believe we are the first to empirically test this prediction.

4 Research design

4.1 Sample

Our sample begins with all quarterly earnings announcements from Compustat merged with I/B/E/S between 1998 and 2015 (324,964 observations). We remove financial services and utilities firms (76,657 observations) and firms with missing variables required in our analyses (90,305 observations), for a final sample of 158,002 firm-quarters. Table 1, Panel A provides details on the sample construction. We use this sample of 158,002 firm-quarters when examining voluntary guidance data. Our conference call data is restricted between 2002 and 2015 (119,459 observations), and the non-GAAP disclosure data is restricted between 1998 and 2006 (48,337 observations). Our sample is reasonably distributed across industries, with the greatest concentration in Business Equipment and the lowest concentration in Consumer Durables and Chemicals. Table 1, Panel B displays the sample composition by industry.

Table 2 presents the correlation matrix. Using Pearson correlations, we find positive correlations between the propensities to provide disclosure for all three voluntary disclosure methods. We also find that distraction is negatively correlated with the propensity to provide voluntary disclosure for all three methods. Table 3 contains summary statistics for the sample. We note that approximately 55% of firm-quarters contain a management forecast, 67% contain a conference call, and 18% contain a non-GAAP disclosure. Institutional owners hold, on average, 62% of firm shares in our sample, confirming that they are a significant group of shareholders. We also find that among the institutional investors quasi-indexers are the biggest group holding 42% of firms' shares, followed by the dedicated (15%) and transient investors (5%).

4.2 Distraction

We utilize an exogenous measure of institutional distraction developed by Kempf et al. (2016). The intuition behind the measure is as follows: consider two manufacturing firms, Firm A and Firm B. Firm A has a representative institutional owner that has a high percentage of its holdings in the energy sector. Firm B's representative institutional owner has no holdings in the energy sector. If the energy sector has a crisis, e.g., an oil spill, then Firm A's institutional owner is likely to be distracted because it must devote time and resources to assess the events in the energy sector. Firm B's institutional owner, however, does not own any energy sector firms, and therefore does not have to devote as much time and resources to the events in the energy sector. As such, Firm B's institutional owner can pay more attention to Firm B. Our measure of distraction uses the portfolio of a firm's institutional owners in industry's other than the firm's own and whether that portfolio is subject to distracting events.

Following Kempf et al. (2016), we construct our firm-quarter measure of distraction (*DISTRACTION*) as follows:

$$DISTRACTION_{fq} = \sum_{i \in F_{q-1}} \sum_{IND \neq IND_f} w_{ifq-1} \times w_{iq-1}^{IND} \times IS_q^{IND}$$

$DISTRACTION_{fq}$ is the level of distraction for firm f in quarter q. i is an institutional owner of firm f obtained from 13-f filings, and F_{q-1} is the population of the firm's institutional owners in the quarter prior to the quarter of measurement. We lag the population of owners so that the level of ownership is unaffected by current quarter distracting events. IND_f is the Fama-French twelve industry of firm *f*. Thus, we sum over each institutional owner of a firm and over each industry that an individual institutional owner has in their portfolio, other than the firm's own industry.

The remainder of the equation, $w_{ifq-1} \times w_{iq-1}^{IND} \times IS_q^{IND}$, is at a firm-quarter-institution-industry level.

IS_q^{IND} is the industry shock, an indicator equal to 1 if industry *IND* has a distracting event in quarter *q* and 0 otherwise. We define a distracting event as industry *IND* having the highest or lowest returns out of the twelve Fama-French industry classifications in a given quarter. w_{iq-1}^{IND} is a weighting factor that measures how important industry *IND* is to investor *i* in quarter *q-1*. It is calculated as the market value weight of industry *IND* in investor *i*'s total portfolio. w_{ifq-1} is a weighting factor measuring how important investor *i* is to firm *f* in quarter *q-1*. Intuitively, investor *i*'s distraction is weighted more heavily if investor *i* owns a higher percentage of firm *f*'s shares or if firm *f* makes up a higher percentage of investor *i*'s portfolio. w_{ifq-1} is calculated formally as follows:

$$w_{ifq-1} = \frac{QPFweight_{ifq-1} + QPercOwn_{ifq-1}}{\sum_{i \in F_{q-1}} (QPFweight_{ifq-1} + QPercOwn_{ifq-1})}$$

$PercOwn_{ifq-1}$ is the percentage of firm *f*'s shares held by investor *i* in quarter *q-1*, and $PFweight_{ifq-1}$ is the market value weight of firm *f* in investor *i*'s portfolio in quarter *q-1*. Each variable is sorted into quintiles ($QPercOwn_{ifq-1}$ and $QPFweight_{ifq-1}$) and the final measure is scaled by the sum across all the firm's institutional owners so that the sum of the weights is 1.[15]

Overall, this measure of distraction takes each firm's institutional ownership and examines each institution's holdings in industries other than the firm's own. If the industry has a distracting event, an investor is considered more distracted when they own more of that industry and when the investor is more important to the given firm. We then aggregate this distraction

[15] We construct this measure following the description in Kempf et al. (2016). To verify that we have coded it correctly, we compare our calculations to those available on Kempf's website. We find that our calculations are similar to theirs during the time period they make publically available.

over every industry for a given investor, and across all investors for a given firm. We measure distraction in the calendar quarter prior to an earnings announcement (see Appendix B for a timeline of variable measurement).[16] We use this measure to capture the overall distraction of institutional investors (*DISTRACTION*). We use a similar methodology to construct attention measures for each of the three type of institutional investors: quasi-indexer (*DISTRACTION_QUASI*), dedicated (*DISTRACTION_DED*), and transient (*DISTRACTION_TRAN).*[17]

We make two assumptions in the construction of this measure. First, the distracting events in industries other than the firm's own are exogenous to the firm itself, e.g., in the example above, the oil spill does not materially affect the operations of Firm A or B. Second, the portfolio holdings of a firm's institutional owners in industries other than the firm's own are unrelated to the firm's disclosure decision. By this we mean that Firm A's institutional owner's decision to own energy stocks is unrelated to Firm A's disclosure decisions, and likewise Firm B's institutional owner's decision to not own energy stocks is unrelated to Firm B's disclosure decisions. Given that these portfolio holdings are in industries other than the firm's own, we consider this a reasonable assumption.

We largely rely on the efforts of Kempf et al. (2016) to validate this measure of distraction. Beyond their main results, which are consistent with distraction resulting in looser

[16] It is not obvious, *ex ante*, when distraction should be measured in relation to disclosure (i.e., whether it should be lagged, contemporaneous, a historical average, etc.). If measured contemporaneously over the same calendar quarter, the distracting event may occur after the firm's earnings announcement and therefore would not influence disclosure. Additionally, there may be a delay between when investors become distracted and when managers realize they are distracted. As such, in our primary specification we choose a lagged measure of distraction. In untabulated robustness tests, we use an average of the prior three quarters of distraction, following Kempf et al. (2016). We find results consistent with our main inferences in Section 5.1, namely a decreased propensity to provide management guidance and non-GAAP disclosure when investors are distracted. We also use a contemporaneous measure of distraction. Again, our inferences remain unchanged.

[17] We define institution types consistent with Bushee and Noe (2000) and thank Brian Bushee for making the classifications publicly available.

monitoring from shareholders, they perform several tests to validate that this measure captures investor distraction. For example, they find that distraction is negatively correlated with the number of conference call participants and shareholder proposals made by institutions. They also find that institutions are less likely to change their portfolio positions in firms not in the attention grabbing industries in a given quarter. As such, we consider this a reasonable measure of institutional distraction that is plausibly exogenous.

4.3 Disclosure

Our research question is whether institutional distraction affects the likelihood that firms issue voluntary disclosures and the characteristics of such disclosures. In our analyses, we examine three types of voluntary disclosures: management forecasts, non-GAAP disclosures, and conference calls.

We obtain management forecast data from I/B/E/S, which tracks management forecasts for EPS, sales, EBIDTA, EBIDTA per share, capital expenditures, dividends per share, funds from operations, fully reported EPS, gross margin, net income, operating profit, pretax income, ROA, and ROE. We create an indicator variable, *FORECAST,* which equals 1 if the firm issues at least one forecast in the period from four days after the prior quarter's earnings announcement to three days after the current quarter's earnings announcement (see Appendix B), and 0 otherwise.

We also examine the precision and quantity of issued forecasts. First, we examine the type of forecast issued, namely whether it is a point forecast (most specific, a single value), closed range forecast (the actual is expected to fall in between two values), or open range forecast (least specific, a single value forecasted above or below which the actual is expected to fall, with no bound). We set *PRECISION* equal to 3 if it is a point forecast, 2 if it is a closed

range forecast, and 1 if it is an open range forecast, so that higher values indicate more precise forecasts. We define *SPECIFICITY* as the absolute value of the forecast range, scaled by price, or zero if it is a point forecast. We multiply this amount by negative one so that larger values indicate higher specificity. We also consider the horizon of management forecasts, calculated as the number of days between the forecast date and date forecasted (*HORIZON*). Regarding the quantity of disclosures made, managers have the option to forecast at multiple horizons and different measures (e.g., sales, ROA, CapEx, etc.). We measure *FORECAST_COUNT* as the count of the number of forecasts issued.

Non-GAAP disclosures have become more common in recent years; unlike forecasts, they are not forward-looking, but an alternative earnings metric provided by managers, typically at an earnings announcement. Non-GAAP disclosures typically exclude selected gains and losses that managers claim to be less persistent in order to provide a more informative earnings number. Many studies document the importance of these disclosures. For example, Bhattacharya et al. (2003) find evidence that non-GAAP earnings metrics are more useful to investors than are GAAP earnings. While some studies find that some managers use these disclosures opportunistically by inappropriately excluding persistent losses, other studies find that some managers exclude transitory gains in order to better inform the market (Curtis, McVay, and Whipple 2013; Doyle, Jennings, and Soliman 2013).

We examine non-GAAP earnings in addition to management forecasts for two reasons. First, theory suggests that managers' incentives for providing non-GAAP disclosures may differ from those of management forecasts. Hirshleifer et al. (2003) predict that managers will increase their opportunistic non-GAAP earnings disclosures when distraction increases, as inattentive investors are less likely to unravel the opportunistic component of these disclosures. Because

non-GAAP earnings are not forward looking, they do not face the same ex post settling up problem that management forecasts do, and as such it is possible that institutional distraction could decrease demand for forecasts but increase the provision of non-GAAP earnings. Second, non-GAAP disclosures allow us to examine different disclosure characteristics (e.g., non-GAAP earnings are ideal for testing the aggressiveness of disclosures, but not the precision). Third, the literature suggests that sophisticated investors, such as institutions, appropriately untangle and ignore opportunistic non-GAAP earnings (Bhattacharya, Black, Christensen, and Mergenthaler 2007). If institutions do not use non-GAAP earnings, then institutional distraction may have no effect on managers' decisions to issue them. Last, litigation costs for non-GAAP disclosures differ from those of management forecasts, which may affect the cost-benefit tradeoff for managers (Cazier et al. 2016).

Our non-GAAP earnings data is hand-collected from a comprehensive sample of quarterly earnings press releases from 1998 through 2006. We search keywords related to non-GAAP earnings commonly used by firms.[18] We consider an earnings release to have a non-GAAP disclosure if there exists a non-GAAP earnings number that differs from the GAAP diluted EPS number. We construct *NG* equal to 1 if the firm issues a non-GAAP earnings disclosure in calendar quarter *t* and 0 otherwise.

We also investigate the aggressiveness of non-GAAP earnings disclosures. We define *CONSENSUS* as equal to 1 if the non-GAAP earnings exceeds the consensus analyst forecast but the GAAP earnings does not. This measure captures aggressiveness because it suggests that management excluded losses from non-GAAP earnings to meet expectations. We also consider

[18] Terms include: "pro forma," "pro-forma," or "proforma," "earnings excluding," "net income excluding," "adjusted net income," "adjusted loss," "cash earnings," "earnings before," "free cash flow," "normalized EPS," "normalized earnings," "recurring earnings," "distributable cash flow," "GAAP one-time adjusted," "GAAP adjusted," and "cash loss."

the placement of the non-GAAP earnings number in the press release, where *PROFIRST* is equal to 1 if the non-GAAP number is disclosed first in the press release and GAAP earnings second, and 0 otherwise. We also examine the income statement items managers choose to exclude from GAAP earnings to arrive at their non-GAAP earnings metric. We define *MGRRECUR* as the difference between non-GAAP earnings and GAAP earnings, where a greater value suggests a more aggressive (income-increasing) non-GAAP earnings disclosure. Last, as an alternative method to capture aggressive non-GAAP reporting, we define an indicator variable, *RECUR*, which is equal to 1 if non-GAAP earnings exceeds GAAP earnings and 0 otherwise.

Last, we consider whether firms hold conference calls as well as the length and tone of calls held. We examine conference calls because institutions can participate in calls and ask questions, and therefore they may be a highly visible means by which managers can observe that investors are distracted. Although Kempf et al. (2016) find the number of call participants decreases when distraction is high, this does not necessarily mean managers disclose less. Even with fewer participants, managers may still hold calls and do not necessarily decrease the length of their calls. We measure *CONFERENCE CALL* as equal to 1 if the firm holds a conference call in the window from four days after the prior earnings announcement and three days after the current earnings announcement and 0 otherwise. We calculate the log of the word count in the conference call (*WC*) as a proxy for the quantity of information disclosed. Managers may discuss their firm less (more) or answer fewer (more) questions if distraction reduces (increases) demand for disclosure. As a proxy for aggressiveness, we consider the tone of the call using three proxies based on the dictionary developed by Loughran and McDonald (2011). We measure the log of the count of positive words (*WC_POS*), the log of the count of negative words (*WC_NEG*), and

the overall tone (*TONE*), calculated as the log of the positive word count less the negative word count, scaled by the sum of the positive and negative word counts.

4.4 Research design

Our primary model is as follows:

$$\begin{aligned} DISCLOSURE_{fq} = \quad & DISTRACTION_{fq} + INSTCONC_{fq} + INSTOWNER_{fq} + \\ & ANALYST_{fq} + SURPRISE_{fq} + ROA_{fq} + ROAVOL_{fq} + SIZE_{fq} + \\ & MTB_{fq} + LEVERAGE_{fq} + RETURN_{fq} + GAAPLOSS_{fq} + \\ & SPECIALCHG_{fq} + NEGFE_{fq} + LAGDISCLOSURE_{fq} + \\ & FIXEDEFFECTS + \epsilon_{fq} \end{aligned} \tag{1}$$

We regress the current quarter disclosure variable (discussed above in Section 4.3) on *DISTRACTION* and numerous control variables that are associated with disclosure decisions (see Appendix A for variable definitions). First, we control for the concentration of the firm's institutional owners (*INSTCONC*) and the level of institutional ownership (*INSTOWNER*). We also control for the firm's current performance with the earnings surprise (*SURPRISE*), ROA (*ROA*), current quarter stock returns (*RETURNS*), whether the firm has negative GAAP earnings (*GAAPLOSS*), a negative earnings surprise indicator (*NEGFE*), and whether the firm reports any special items (*SPECIALCHG*). Firm size (*SIZE*), market-to-book (*MTB*), leverage (*LEVERAGE*), and analyst coverage (*ANALYST*) account for firm characteristics and the information environment. Last, we control for the prior quarter's disclosure level (*LAGDISCLOSURE*), which is important given the stickiness of disclosure.

Our research design relies on our measure of distraction being sufficiently exogenous that it affects disclosure only through the investors' distraction. We use different combinations of fixed effects to mitigate the risk that the distraction measure is correlated with firm, time, and

industry characteristics. First, we include year, industry, and fiscal quarter fixed effects. Year fixed effects control for changes in public disclosure and access to private information over time. Industry and fiscal quarter fixed effects ensure that *DISTRACTION* is not correlated with a given industry or quarter. It is possible that some unobserved firm characteristic leads to more distracted investors and affects disclosure decisions. To mitigate this, we include firm-quarter fixed effects (e.g., Apple Inc. in the fourth fiscal quarter). Last, there is a risk that an unobserved event affects the distraction level for a given industry at a given time and changes that industry's disclosure decisions. We include industry-year-quarter fixed effects to control for time and industry varying shocks. When this control is included, a given industry in a quarter can have its own shock to disclosure, and the only remaining difference between firms within that industry are the portfolios of their institutional owners in other industries. We consider this our most stringent specification, but also the one with the best identification where *DISTRACTION* is the most exogenous.[19] The downside to this specification is that we may lose some of the economic effects of distraction. For example, if an entire industry is suffering from distraction, firms in the industry as a whole may respond through disclosure. This specification prevents us from detecting industry-time distraction effects on disclosure. We tabulate both the industry, year, and quarter fixed effects model as well as the industry-year-quarter model to ensure that our identification is strong, and that we are not controlling away the economic effects of distraction.

5 Results

5.1 Investor inattention and the propensity to provide voluntary disclosure

In this section, we present the results from testing our first hypothesis, which examines the relation between investor inattention and firms' likelihood of providing voluntary disclosure.

[19] Kempf et al. (2016) use the industry-year-quarter fixed effects for the best identification as well.

Figure 1 presents the likelihood of a firm providing voluntary disclosure based on whether the firm-quarter involves low or high investor inattention. We consider a firm-quarter as having low (high) distraction if *DISTRACTION* is in the lowest (highest) tercile across the sample. Figure 1 illustrates that disclosure is lower when distraction is higher for all three types of disclosure. Moving from low to high distraction, the likelihood of providing a management forecast, holding a conference call, and providing a non-GAAP disclosure goes from 59% to 48%, 68% to 64%, and 21% to 14%, respectively. This initial, univariate evidence suggests that investor attention decreases firms' propensity to provide voluntary disclosure in a meaningful way.

Table 4 presents our multivariate analysis utilizing variations of equation (1). We present separate panels for each of our three disclosure measures. Each panel presents five different specifications. In each panel, column 1 presents a simple OLS regression with no controls. Column 2 has the controls discussed in Section 4.4, industry, quarter, and year fixed effects. Column 3 has controls, firm-quarter, and year fixed effects. Column 4 has controls and industry-year-quarter fixed effects. As discussed in Section 4.4, these various models mitigate the risk of an omitted correlated variable that is associated with both distraction and firm outcomes. In contrast to columns 1-4 which utilize linear probability models, column 5 presents a logit model with controls and industry, year, and quarter fixed effects. We do this to avoid the incidental parameters problem that occurs when including too many fixed effects with a logit regression.

Table 4, Panel A presents results for management forecasts. In all five specifications, we find a significantly negative relation between *DISTRACTION* and *FORECAST*. These results suggest that firms are less likely to provide a management forecast when investors are distracted. Table 4, Panel B presents results for conference calls. Across four of the five specifications, we find a negative relation between *DISTRACTION* and *CONFERENCE CALL*. However, the

coefficient on *DISTRACTION* is significantly negative at traditional levels only in column 1 (p-value <1%). These results provide some weaker evidence that firms are less likely to hold a conference call when investors are distracted. It is not surprising that results are weaker when examining conference calls because the percentage of firm-quarters with a conference call is relatively high and there is significant serial correlation within firm. Table 4, Panel C presents results for non-GAAP disclosures. Across all five specifications, we find a negative relation between *DISTRACTION* and *FORECAST*. The coefficient on *DISTRACTION* is significantly negative at the 1% level in four of the five specifications. These results suggest that firms are less likely to provide a non-GAAP disclosure when investors are distracted.

In summary, our results indicate that firms are less likely to provide voluntary disclosures when institutional owners are distracted. Our results are consistent through a battery of tests. They generally hold in both univariate tests and after controlling for several other important factors that determine firms' disclosure decisions. In addition to including common firm-quarter characteristics as controls, we also control for industry, year, quarter, firm-quarter, and industry-year-quarter fixed effects to control for time-invariant firm characteristics, industry-wide disclosure practices, industry-time variations in disclosure, and disclosure practices that change over time and throughout the year. Of note, we control for whether a firm provided a disclosure in the prior period, which better allows us to identify a change in disclosure practice due to investor inattention. As expected, given the stickiness of disclosure, we find a significantly positive relation between whether a firm provided a given disclosure in the prior quarter and whether they provide one in the current quarter. We also control for the level of institutional ownership, which suggests distraction has an incremental effect on disclosure above the percentage of shares owned by institutions.

5.2 Types of institutions

We next examine whether the effect of investor distraction on firm disclosure varies by investor type. Following Bushee and Noe (2000), we classify institutions into three categories (dedicated, transient, and quasi-indexer) based on portfolio turnover, diversification, and investment horizon. Boone and White (2015) argue that different types of institutions have different disclosure preferences. Dedicated investors hold large positions in few firms over a long period of time. This investment strategy affords dedicated institutions the ability to interact with management and rely more heavily on private information sources as opposed to public disclosures (Bushee and Noe 2000; Admati and Pfleiderer 2009). Because dedicated institutions have fewer investments and more private information sources, we expect their distraction to have a weaker effect on disclosure than other institution types. Transient institutions hold small positions for short periods of time, and therefore are unlikely to influence management disclosure decisions (Beyer, Larcker, and Tayan 2014).

Quasi-indexers, such as open-ended funds and pensions, have diverse portfolios and low turnover, often tracking the performance of an index. Their strategies rely on public disclosure to reduce information asymmetry, thereby reducing the cost of monitoring management and decreasing the cost of trading. Although their trading strategies are passive, quasi-indexers are active voters and monitors of management. Moreover, Boone and White (2015) find compelling evidence using Russell Index reconstitutions that increases in quasi-indexer ownership increase voluntary forecasts by management. This suggests quasi-indexers both have disclosure preferences and are sufficiently active to communicate these preferences to management. Quasi-indexers' diverse holdings make it likely they monitor industries with attention grabbing events. Significant events in a given industry may draw quasi-indexer attention by forcing fund

managers to respond to cash inflows or outflows, to rebalance their portfolio in the distracting industry, or the event may demand greater monitoring of firm management. Following this thinking, we expect that distraction from quasi-indexers will have a stronger effect on firms' voluntary disclosure decisions than will the distraction of dedicated or transient investors.

To examine this question, we separately calculate the distraction of quasi-indexer, transient, and dedicated institutional investors for each firm-quarter. Table 5 reports results based on the model of equation (1) except that individual distraction measures for each of the three types of investors are included rather than *DISTRACTION*, and the individual institutional ownership levels are included as controls for each type of institution. Columns 1, 2, and 3 report results for *FORECAST*, *CONFERENCE CALL*, and *NG*. We present two panels that vary as to the type of fixed effects included. Panel A includes industry, year, and quarter fixed effects and Panel B includes industry-year-quarter fixed effects. In both panels, we find that the distraction of dedicated and transient investors has no significant effect on firms' decisions to provide voluntary disclosures. In contrast, we find that the coefficient on the quasi-indexer distraction (*DISTRACTION_QUASI)* is negative in all three columns and is significantly negative in columns 1 and 3 for both panels. This suggests that when quasi-indexers are distracted, firms are less likely to provide a management forecast and a non-GAAP disclosure. These results complement our prior findings because they suggest that the negative relation we observe between investor distraction and voluntary disclosure is largely driven by the distraction of quasi-indexers, who are argued to have the strongest effect on firms' disclosure decisions.

5.3 Voluntary disclosure characteristics

We next examine the relation between investor distraction and voluntary disclosure characteristics, including disclosure precision, aggressiveness, and quantity. We organize our

analysis of disclosure characteristics by the form of disclosure. Tables 6, 7, and 8 report results for management guidance, conference calls, and non-GAAP disclosures, respectively. For each test, we use the same model as equation (1) with the disclosure characteristic as the dependent variable. Each of these tables contains three panels that vary as to the fixed effects included and the measure of distraction. Panel A includes industry, quarter, and year fixed effects. Panel B includes industry-year-quarter fixed effects. Panel C includes the distraction of quasi-indexers (*DISTRACTION_QUASI*), rather than the general distraction measure (*DISTRACTION*), as the variable of interest. We include this panel because our results in Table 5 suggest that disclosure changes are driven by quasi-indexers.

Table 6 presents results for management guidance characteristics. In general, we find that investor distraction is significantly and negatively related to the number of pieces of guidance issued in a quarter (*FORECAST_COUNT)* and the horizon of the forecast provided (*HORIZON*), and is significantly and positively related to both the specificity (*SPECIFICITY)* and precision (*PRECISION*) of the forecast. These results are all statistically significant at traditional levels except for the coefficient on *SPECIFICITY* in Panels A and Panel B. However, the coefficient on *SPECIFICITY* is significant at 1% when we examine the distraction of quasi-investors, which is where we expect the strongest effect of distraction. These results suggest that firms provide fewer voluntary disclosures when investors are distracted. However, they provide disclosures that are more precise and less forward-looking. This is consistent with firms providing less disclosure because there is less demand for information from investors and providing disclosures that are easier for investors to process when investors have less time and fewer resources.

Table 7 presents results for conference call characteristics. We find evidence that investor distraction is negatively related to the number of words in a conference call (*WC)*, the number of

positive words (*WC_POS*), and the overall tone of the conference call (*TONE*). However, the level of significance varies, with each coefficient being significant in two of three panels. We find no significant relation with investor distraction and the number of negative words *(WC_NEG*). Overall, the results in this table provide evidence that firms provide voluntary disclosures with less content and disclosures that are less aggressive when investors are distracted. This is consistent with firms providing less disclosure because investors demand less disclosure and firms disclosing less aggressively when there is less pressure from investors.

Table 8 presents results of non-GAAP disclosure characteristics. In general, we find evidence that investor distraction is negatively related to the use of non-GAAP disclosures to meet benchmarks (*CONSENSUS*), the emphasis placed on non-GAAP earnings metrics (*PROFIRST*), and the income increasing exclusions from non-GAAP earnings (*RECUR* and *MGRRECUR*). Again, the level of significance varies depending on the panel, but each coefficient is significant in at least two of the three panels. Overall, the results in this table provide evidence that when investors are distracted, firms provide non-GAAP disclosures that are less aggressive. This is consistent with firms being less aggressive when there is less pressure from investors.

Across all three measures of voluntary disclosure, we find fairly consistent evidence that investor inattention leads to changes in what firms voluntarily disclose. Generally, we find that firms provide voluntary disclosures that contain less content, are less aggressive, and are more precise. These findings are consistent with firms reacting to decreased demand for disclosure in general, decreased pressure from investors to report good news, and increased demand for disclosure that is easier to process.

5.4 Additional analysis

5.4.1 Level of institutional ownership and analyst coverage

We perform additional analyses to provide further evidence that our main results are attributable to institutional investor inattention. First, we examine whether the effect of institutional investor distraction on voluntary disclosure varies with the level of institutional ownership in the firm. We expect that the effect of investor distraction on voluntary disclosure will be stronger if institutional investors make up a larger portion of a firm's ownership. To capture high institutional ownership, we define an indicator variable (*HIGHIO*), which equals 1 for firms with institutional ownership in the top quartile, and 0 otherwise. Using the specification from equation (1), we add our measure of high institutional ownership (*HIGHIO*) and its interaction with (*DISTRACTION*). Table 9, Panel A presents the results. We find that the coefficient on *DISTRACTION x HIGHIO* is significantly negative in column 1. This suggests that the effect of distraction on firms' likelihood of providing a management forecast is stronger when institutional investors make up a larger portion of a company's ownership. However, we find no significant results with respect to conference calls and non-GAAP disclosures.

Second, we examine whether the relation between investor distraction and voluntary disclosure varies with the level of analyst coverage of the firm. Because analysts provide an alternative source of information, they act as substitutes for firm disclosures (Anantharaman and Zhang 2011; Balakrishnan, Billings, Kelly, and Ljungqvist 2014). Investors may demand fewer firm disclosures when distracted if they can rely on information provided by analysts, and it may be less costly for firms to reduce voluntary disclosures when they have a high analyst following.[20] As such, we expect the relation between investor distraction and disclosure to be

[20] Intuition might suggest that analysts act as an additional source of demand for disclosures, and therefore high coverage firms will not stop disclosing when distraction is high. However, evidence suggests that analysts function

stronger when analyst coverage is high. We define an indicator variable (*HIGHCOV*), which equals 1 if the firm's analyst coverage is in the top quartile, and 0 otherwise. Using the specification from equation (1), we add our measure of high analyst coverage (*HIGHCOV*) and its interaction with (*DISTRACTION*). Table 9, Panel B presents the results. We find that the coefficient on *DISTRACTION x HIGHCOV* is significantly negative in columns 1 and 3 (management forecasts and non-GAAP disclosures). This suggests that, as expected, the effect of distraction on firms' likelihood of providing voluntary disclosure is stronger when firms have a significant analyst following.

5.4.2 The magnitude of distracting event and good vs. bad news

In untabulated analyses, we consider whether the negative association between distraction and disclosure depends on the magnitude of distracting events and whether the news the manager holds is good or bad. First, we consider whether bigger distracting events have a stronger effect on disclosure. We interact *DISTRACTION* with an indicator for whether the high industry return is in the top quartile of high industry returns and the low industry return is in the bottom quartile of low industry returns. We find the interaction term is negative and significant for forecasts, conference calls, and non-GAAP earnings, indicating the association between distraction and disclosure is stronger when the distracting events are larger. The coefficient on *DISTRACTION* remains negative and significant for forecasts and non-GAAP disclosures. This result provides further evidence that our main findings are attributable to investor inattention caused by economic shocks in industries other than the firm's own. Second, we consider whether managers hold good or bad news. Managers may be more likely to disclose good news when investors are distracted in order to attract attention, or they may be more likely to disclose bad

as a substitute for voluntary disclosures rather than as a source of demand for such disclosures (Anantharaman and Zhang 2011; Balakrishnan et al. 2014). Thus, we expect firms with high coverage to be more likely to reduce disclosure when distraction is high because analysts substitute for information production.

news in the hopes that it is overlooked. In untabulated robustness tests, we interact *DISTRACTION* with an indicator for whether the earnings surprise is positive or negative, finding no significant association between the interaction term and the likelihood of providing voluntary disclosures.

6 Conclusion

Researchers have long been interested in the capital market consequences of investor inattention. However, only recently have studies begun to examine how investor inattention affects corporate actions, with none examining firms' voluntary disclosure decisions. The literature examining the relationship between institutional ownership and firms' voluntary disclosure decisions suffers from a high risk of endogeneity, as it is unclear whether institutions are attracted to high disclosure or whether they demand the disclosure themselves (Healy and Palepu 2001; Beyer et al. 2010). To address these holes in the literature, we employ a shock to institutional investor attention developed by Kempf et al. (2016) to examine whether investor attention influences firms' voluntary disclosure decisions.

To achieve a comprehensive view of the effects of investor attention on voluntary disclosure, we examine three common voluntary disclosure methods (management guidance, non-GAAP reporting, and conference calls). Consistent with firms responding to decreased investor demand for disclosure when distracted, we find that firms are less likely to provide voluntary disclosures when investors are less attentive. We find that this relation is isolated to the distraction of quasi-indexers, which is consistent with prior literature documenting that quasi-indexers affect firms' disclosure decisions (Boone and White 2015). We also find that across the three disclosure types, firms' voluntary disclosures are more precise, less aggressive, and contain

less content when investors are less attentive. In additional analysis, we find that the negative association between distraction and the propensity to provide disclosure is stronger for firms with high analyst coverage and high institutional ownership. In summary, our results suggest that investor inattention is an important factor determining firms' propensity to provide voluntary disclosures and the characteristics of their voluntary disclosures.

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APPENDIX A: Variable Descriptions and Data Sources

Variable	Description	Data Source
Shareholder Distraction Measures		
DISTRACTION	$\sum_{i \in F_{q-1}} \sum_{IND \neq IND_f} w_{ifq-1} \times w_{iq-1}^{IND} \times IS_q^{IND}$ *i* is an institutional owner of firm *f* obtained from 13-f filings, and F_{q-1} is the population of the firm's institutional owners in the quarter prior to the quarter of measurement. IND_f is the Fama-French twelve industry of firm f. IS_q^{IND} is the industry shock, an indicator equal to 1 if industry *IND* has a distracting event in quarter *q* and 0 otherwise. w_{iq-1}^{IND} is a weighting factor that measures how important industry *IND* is to investor *i* in quarter *q-1*. w_{ifq-1} is a weighting factor measuring how important investor *i* is to firm *f* in quarter *q-1*.	Thomson Reuters
DISTRACTION_QUASI	DISTRACTION measured as above for Quasi-Indexers	Calculated
DISTRACTION_DED	DISTRACTION measured as above for Dedicated Institutional Investors	Calculated
DISTRACTION_TRAN	DISTRACTION measured as above for Transient Institutional Investors	Calculated
Voluntary Disclosure Variables		
FORECAST	Indicator variable set to 1 if the firm issues at least one management forecast between 4 days after quarter t-1 EA date to 3 days after quarter t EA date	I/B/E/S
CONFERENCE CALL	Indicator variable set to 1 if the firm holds a conference call during quarter t	Hand-Collected
NG	Indicator variable set to 1 if the firm issues a Non-GAAP forecast during quarter t	Hand-Collected
FORECAST_COUNT	The number of distinct days on which the firm issued guidance during the disclosure period	Compustat
HORIZON	The number of days between the forecast date and the date forecasted (measured for the EPS forecast with the longest horizon in the disclosure period)	Compustat

Variable	Description	Data Source
PRECISION	Equals 3 if the forecast is a point estimate, 2 if the forecast is a closed range, and 1 if the forecast is an open ended range (measured for the EPS forecast with the longest horizon in the disclosure period)	Compustat
SPECIFICITY	Top of the management forecast range less the bottom of the range deflated by pre-release share price; equals 0 for point estimate (multiplied by negative 1 so higher values represent more specific forecasts)	Compustat
WC	Log of total word count during conference call	Hand-Collected
WC_POS	Log of the number of positive words during conference call, where positive words are defined using the dictionary from Loughran and McDonald (2011)	Hand-Collected
WC_NEG	Log of the number of negative words during conference call where negative words are defined using the dictionary from Loughran and McDonald (2011)	Hand-Collected
TONE	Log (1 + (*WC_POS* – *WC_NEG*)/(1+ *WC_POS* + *WC_NEG*))	Calculated
CONSENSUS	Equals 1 if non-GAAP earnings meets or beats the mean analyst forecast but GAAP EPS falls short, 0 otherwise	Hand-Collected
PROFIRST	Equals 1 if the non-GAAP earnings metric is mentioned first (i.e., before GAAP earnings) in the press release, 0 otherwise	Hand-Collected
RECUR	Equals 1 if non-GAAP earnings is greater than GAAP earnings, 0 otherwise	Hand-Collected
MGRRECUR	Managers' recurring exclusions per share, calculated as the magnitude of the difference between non-GAAP EPS and GAAP EPS.	Hand-Collected
Control Variables		
INSTCONC	Concentration of Institution Ownership	Thomson
INSTOWNER	Percentage of stock held by institutional investors	Thomson
INSTOWNER-QUASI	Percentage of stock held by Quasi-institutional investors	Calculated
INSTOWNER-DED	Percentage of stock held by Dedicated institutional investors	Calculated
INSTOWNER-TRAN	Percentage of stock held by Transient institutional investors	Calculated
ANALYST	Number of analysts with a forecast in the consensus forecast calculation	IBES
SURPRISE	Actual earnings from IBES for current quarter less the earnings from last quarter, scaled by stock price at the beginning of the preannouncement period	IBES, CRSP
ROA	Ratio of earnings before extraordinary items divided by total assets	Compustat
ROAVOL	Standard deviation of return on assets	Compustat
SIZE	Log of total assets	Compustat
MTB	Market value of equity to book value of equity	Compustat

Variable	Description	Data Source
LEVERAGE	Total debt divided by to total assets	Compustat
RETURN	Cumulative monthly stock return over the current quarter	CRSP
GAAPLOSS	An indicator variable equal to 1 if EPSGAAP-OP is negative, 0 otherwise	Compustat
SPECIALCHG	An indicator variable equals to 1 if special items (spiq) is non-zero, 0 otherwise	Compustat
NEGFE	An indicator equal to 1 if GAAP EPS is less than the consensus analyst forecast, and 0 otherwise.	Compustat, I/B/E/S

Figure 1: Shareholder's Distraction and Voluntary Disclosure

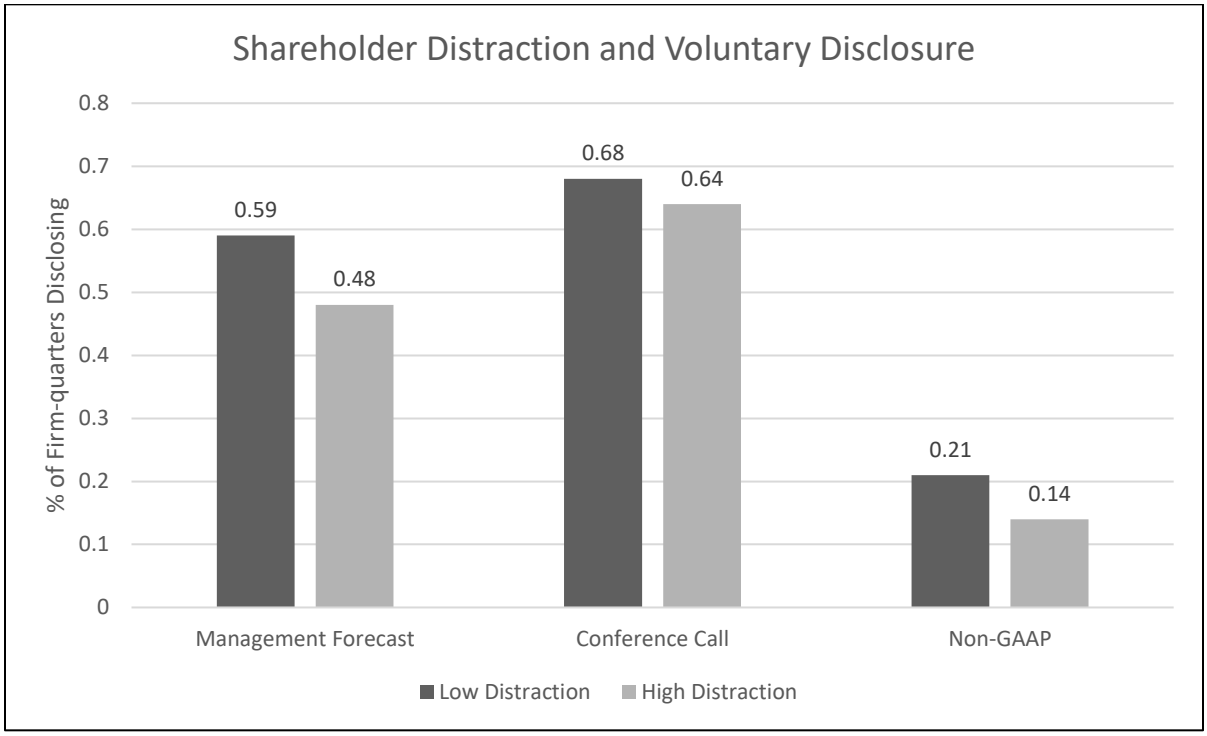

Figure: 2 Timeline of Calculation for Distraction and Management Forecast

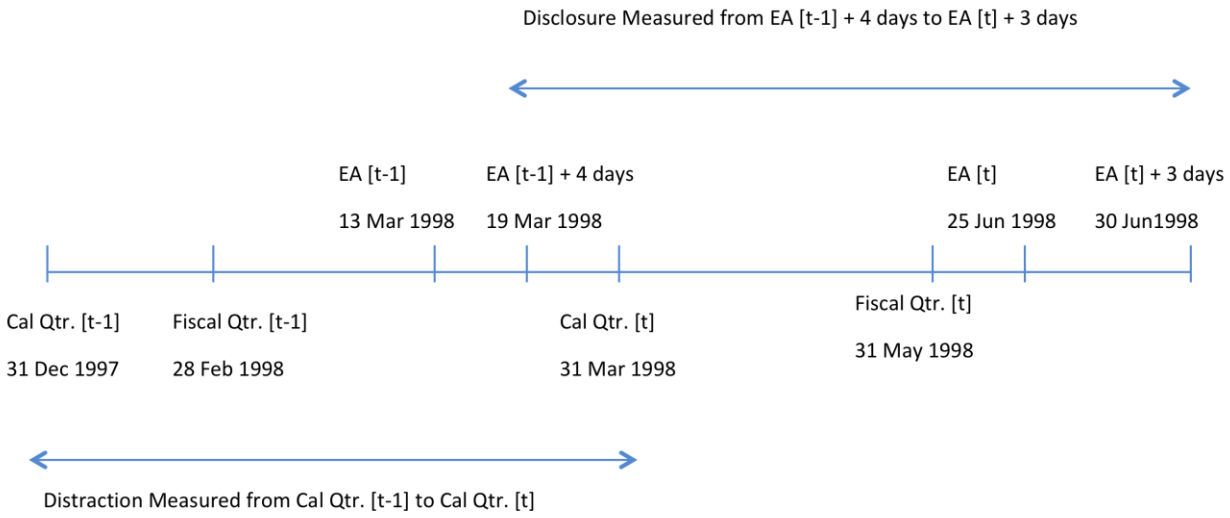

Table 1: Sample Composition

PANEL A: Sample Selection

	Firm-quarters
Compustat and IBES merged sample (1998-2015)	324,964
Less: Financial and Utilities firm-quarters	(76,657)
Less: firm-quarters with missing controls variables	(90,305)
Final Management Forecast Sample	158,002
Less: firm-quarters between 1/1/1998 and 12/31/2001	(38,543)
Final Conf. Call Sample	119,459
Final Management Forecast Sample	158,002
Less: firm-quarters whose corresponding firms have never disclosed non-GAAP earnings over the entire sample period	(35,517)
Less: firm-quarters between 1/1/2007 and 12/31/2015	(74,148)
Final Non-GAAP sample	48,337

PANEL B: Industry Composition

Fama-French industry	*Firm-Years*	*% Firm-Years*	*Unique Firms*	*%Unique-Firms*
Consumer Non Durables -- Food, Tobacco	10,050	6.4	368	5.5
Consumer Durables -- Cars, TV's, Furniture	4,788	3.0	179	2.7
Manufacturing -- Machinery, Trucks, Plant	21,544	13.6	723	10.9
Oil, Gas, and Coal Extraction and Products	7,322	4.6	292	4.4
Chemicals and Allied Products	4,783	3.0	155	2.3
Business Equipment -- Computers, Software	37,731	23.9	1,798	27.0
Telephone and Television Transmission	5,015	3.2	258	3.9
Wholesale, Retail, and Some Services	20,236	0.0	780	11.7
Healthcare, Medical Equipment, and Drug	22,571	12.8	1,116	16.8
Other	23,962	14.3	989	14.8
Total	158,002	100	6,658	100

Table: 2 Correlation Matrix

This table reports Pearson correlations between different measures of firms' voluntary disclosure behavior and shareholder distraction. * indicates statistical significance at a p-value < 5% (two-tailed).

	FORECAST	*CONFERENCE CALL*	*NG*	*DISTRACTION*
FORECAST	1			
CONFERENCE CALL	0.5047*	1		
NG	0.0896*	0.0326*	1	
DISTRACTION	-0.0665*	-0.0894*	-0.0239*	1

Table 3: Descriptive Statistics
This table presents descriptive statistics for the variables used in the regression analyses. All variables are defined in Appendix A.

Variable	*N*	*Mean*	*Std. Dev.*	*P25*	*Median*	*P75*
DISTRACTION	158,002	0.144	0.086	0.064	0.14	0.207
DISTRACTION_QUASI	158,002	0.093	0.059	0.041	0.085	0.135
DISTRACTION_DED	158,002	0.045	0.034	0.018	0.037	0.063
DISTRACTION_TRA	158,002	0.004	0.008	0	0.001	0.004
Disclosure Measures:						
FORECAST	158,002	0.55	0.497	0	1	1
CONFERENCE CALL	119,459	0.671	0.47	0	1	1
NG	48,337	0.18	0.384	0	0	0
FORECAST_COUNT	86,922	3.695	3.246	1	3	5
HORIZON	86,922	3.695	3.246	1	3	5
PRECISION	86,922	144.064	4.902	142	146	148
SPECIFICITY	86,922	-1.799	5.335	-1.113	-0.178	-0.001
WC	80,158	8.847	0.352	8.636	8.908	9.103
WC_POS	80,158	4.63	0.453	4.357	4.673	4.956
WC_NEG	80,158	4.229	0.446	3.951	4.263	4.543
TONE	80,158	0.158	0.178	0.055	0.181	0.285
CONENSUS	8,936	0.268	0.443	0	0	1
PROFIRST	8,936	0.442	0.497	0	0	1
RECUR	8,936	0.786	0.41	1	1	1
MGRRECUR	8,869	0.074	0.209	0	0.02	0.08
Control Variables:						
INSTCONC	158,002	0.094	0.1	0.041	0.06	0.105
INSTOWNER	158,002	0.617	0.261	0.424	0.661	0.82
INSTOWNER_QUASI	158,002	0.409	0.201	0.25	0.427	0.563
INSTOWNER_DED	158,002	0.152	0.103	0.073	0.135	0.213
INSTOWNE_TRAN	158,002	0.046	0.063	0.001	0.02	0.069
ANALYST	158,002	7.557	6.287	3	6	11
SURPRISE	158,002	0.038	0.156	0.001	0.004	0.013
ROA	158,002	-0.007	0.063	-0.007	0.01	0.021
ROAVOL	158,002	0.026	0.04	0.005	0.011	0.027

Table 3 (continued)

SIZE	158,002	6.422	1.797	5.12	6.325	7.61
MTB	158,002	3.215	4.326	1.341	2.228	3.817
LEVERAGE	158,002	0.213	0.211	0.011	0.174	0.336
RETURN	158,002	0.027	0.283	-0.122	0.026	0.168
GAAPLOSS	158,002	0.252	0.434	0	0	1
SPECIALCHG	158,002	0.437	0.496	0	0	1
NEGFE	158,002	0.325	0.468	0	0	1

Table 4: The Effect of Investor Distraction on the Likelihood of Providing Voluntary Disclosure
This table reports analyses of the effect of investor distraction on firms' decision to provide voluntary disclosure. *PANEL A* reports results for issuing a management forecast. *PANEL B* reports results for holding a conference call. *PANEL C* reports results for making a non-GAAP disclosure. Columns 1-4 report OLS coefficient estimates and t-statistics based on robust standard errors clustered by firm. Column 5 reports a Logit regression model with industry, quarter, and year fixed effects. Appendix A provides definitions for all variables. We include industry, firm, fiscal qtr., industry*calendar year-qtr, and year fixed effects in the regressions as indicated. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p-levels (two-tailed), respectively.

PANEL A: Management Forecasts

	(1)	(2)	(3)	(4)	(5)
Dependent variable	*Forecast*	*Forecast*	*Forecast*	*Forecast*	*Forecast*
DISTRACTION	-0.516***	-0.096***	-0.102***	-0.059*	-0.788***
	(27.438)	(8.305)	(7.757)	(1.810)	(8.238)
Control Variables:					
INSTCONC		-0.122***	-0.094***	-0.120***	-1.285***
		(8.123)	(3.858)	(7.847)	(9.051)
INSTOWNER		0.096***	0.050***	0.099***	0.630***
		(12.877)	(4.497)	(13.083)	(11.072)
ANALYST		0.005***	0.004***	0.005***	0.040***
		(12.974)	(7.501)	(12.602)	(11.973)
SURPRISE		0.208***	-0.031**	0.207***	-0.200***
		(8.644)	(2.469)	(8.480)	(2.951)
ROA		-0.028***	0.140***	-0.031***	1.748***
		(3.566)	(4.687)	(3.792)	(8.579)
ROAVOL		-0.084**	-0.126***	-0.076**	-0.725***
		(2.564)	(2.756)	(2.318)	(2.785)
SIZE		0.004***	0.029***	0.004**	0.023*
		(2.628)	(7.372)	(2.570)	(1.761)
MTB		-0.000	0.000	-0.000	-0.002
		(0.489)	(0.778)	(0.003)	(1.067)
LEVERAGE		0.021**	0.027**	0.021**	0.157**
		(2.371)	(2.093)	(2.408)	(2.155)
RETURN		0.018***	0.012***	0.022***	0.135***
		(5.074)	(2.988)	(5.737)	(4.890)
GAAPLOSS		-0.042***	-0.053***	-0.042***	-0.283***
		(11.260)	(11.588)	(10.905)	(10.475)
SPECIALCHG		0.018***	-0.005**	0.016***	0.134***
		(7.019)	(1.963)	(6.307)	(6.486)
NEGFE		-0.029***	-0.010***	-0.029***	-0.231***
		(13.195)	(4.061)	(13.028)	(13.364)
LAGGUIDE		0.531***	0.373***	0.526***	2.645***
		(109.012)	(68.283)	(105.499)	(96.627)
Industry Fixed Effects	No	Yes	No	No	Yes
Firm Fiscal. Qtr. Fixed Effects	No	No	Yes	No	No
Industry-Cal-Yr.-Qtr. Fixed Effects	No	No	No	Yes	No
Year Fixed Effects	No	Yes	Yes	No	Yes
Qtr. Fixed Effects	No	Yes	No	No	Yes
Model Type	OLS	OLS	OLS	OLS	Logit
Adjusted R-squared	0.008	0.500	0.551	0.503	0.421
Number of Firm-Quarters	158,002	158,002	158,002	158,002	157,997

Table 4 (continued)
PANEL B: Conference Calls

	(1)	(2)	(3)	(4)	(5)
Dependent variable	*Conference Call*	*Conference Call*	*Conference Call*	*Conference Call*	*Conference Call*
DISTRACTION	-0.146***	-0.011	-0.020	0.005	-0.078
	(7.420)	(0.814)	(1.421)	(0.118)	(0.658)
Control Variables:					
INSTCONC		-0.168***	-0.115***	-0.167***	-1.355***
		(9.338)	(4.183)	(9.240)	(8.256)
INSTOWNER		0.056***	0.029**	0.056***	0.420***
		(7.541)	(2.423)	(7.551)	(6.273)
ANALYST		0.001***	0.001**	0.001***	0.017***
		(4.269)	(2.335)	(4.070)	(4.733)
SURPRISE		-0.008	-0.005	-0.009	-0.044
		(0.892)	(0.435)	(1.067)	(0.627)
ROA		0.053**	0.012	0.048*	0.422*
		(1.985)	(0.365)	(1.786)	(1.873)
ROAVOL		-0.002	0.045	-0.007	-0.094
		(0.064)	(0.899)	(0.199)	(0.338)
SIZE		0.007***	0.026***	0.007***	0.060***
		(4.792)	(5.867)	(4.740)	(4.123)
MTB		0.001**	0.000	0.001**	0.006**
		(2.191)	(1.156)	(2.041)	(2.096)
LEVERAGE		0.017**	0.008	0.017**	0.150**
		(2.181)	(0.584)	(2.177)	(2.023)
RETURN		0.022***	0.011**	0.011**	0.192***
		(5.465)	(2.389)	(2.273)	(5.458)
GAAPLOSS		0.011***	-0.005	0.011***	0.088***
		(3.022)	(1.079)	(2.896)	(2.776)
SPECIALCHG		0.007***	-0.002	0.007***	0.067***
		(2.981)	(0.783)	(2.956)	(2.952)
NEGFE		-0.007***	-0.002	-0.007***	-0.064***
		(3.047)	(0.736)	(3.155)	(3.058)
LAGCONF		0.661***	0.475***	0.663***	3.416***
		(126.717)	(75.945)	(125.885)	(97.468)
Industry Fixed Effects	No	Yes	No	No	Yes
Firm-Qtr. Fixed Effects	No	No	Yes	No	No
Industry-Cal-Yr.-Qtr. Fixed Effects	No	No	No	Yes	No
Year Fixed Effects	No	Yes	Yes	No	Yes
Qtr. Fixed Effects	No	Yes	No	No	Yes
Model Type	OLS	OLS	OLS	OLS	Logit
Adjusted R-squared	0.001	0.508	0.568	0.511	0.423
Number of Firm-Quarters	119,459	119,459	119,459	119,459	119,449

Table 4 (continued)
PANEL C: Non-GAAP Disclosures

Dependent variable	(1) *NG*	(2) *NG*	(3) *NG*	(4) *NG*	(5) *NG*
DISTRACTION	-0.393***	-0.096***	-0.101***	-0.014	-0.828***
	(14.260)	(4.531)	(3.841)	(0.307)	(4.338)
Control Variables:					
INSTCONC		-0.045**	0.019	-0.050**	-0.499**
		(2.069)	(0.459)	(2.268)	(2.193)
INSTOWNER		-0.005	0.001	-0.005	-0.033
		(0.503)	(0.075)	(0.451)	(0.382)
ANALYST		0.003***	0.001	0.002***	0.018***
		(5.382)	(0.748)	(5.008)	(4.808)
SURPRISE		0.006	-0.014	0.004	0.019
		(0.381)	(0.447)	(0.269)	(0.159)
ROA		-0.275***	-0.264***	-0.217***	-2.007***
		(5.789)	(4.447)	(4.598)	(5.918)
ROAVOL		-0.002	-0.013	-0.028	-0.082
		(0.038)	(0.159)	(0.447)	(0.176)
SIZE		0.002	0.067***	0.002	0.027
		(1.146)	(9.395)	(0.962)	(1.594)
MTB		0.001**	0.001*	0.001**	0.011***
		(2.386)	(1.852)	(1.964)	(3.044)
LEVERAGE		0.026**	-0.019	0.030**	0.216*
		(2.000)	(0.871)	(2.252)	(1.955)
RETURN		-0.013**	0.001	-0.014**	-0.094**
		(2.303)	(0.076)	(2.268)	(2.029)
GAAPLOSS		-0.022***	-0.016**	-0.026***	-0.168***
		(4.095)	(2.248)	(4.813)	(3.624)
SPECIALCHG		0.014***	0.005	0.013***	0.135***
		(3.480)	(1.055)	(3.276)	(4.178)
NEGFE		-0.006	0.005	-0.006	-0.050
		(1.528)	(1.203)	(1.593)	(1.535)
LAGNG		0.393***	0.326***	0.388***	2.047***
		(52.472)	(34.803)	(51.880)	(56.914)
Industry Fixed Effects	No	Yes	No	No	Yes
Firm-Qtr. Fixed Effects	No	No	Yes	No	No
Industry-Cal-Yr.-Qtr. Fixed Effects	No	No	No	Yes	No
Year Fixed Effects	No	Yes	Yes	No	Yes
Qtr. Fixed Effects	No	Yes	No	No	Yes
Model Type	OLS	OLS	OLS	OLS	Logit
Adjusted R-squared	0.009	0.201	0.260	0.213	0.185
Number of Firm-Quarters	48,337	48,337	48,337	48,337	48,337

Table 5: The Effect on Voluntary Disclosure of Distraction by Institutional Shareholder Types
This table reports the effect of distraction on the likelihood of issuing voluntary disclosure for the distraction of three types of institutional shareholders (dedicated, quasi, and transient). Columns 1-3 reports OLS coefficient estimates and (in parentheses) t-statistics based on robust standard errors clustered by firm. *PANEL A* reports the results with industry, quarter, and year fixed effects. *PANEL B* reports the results with industry*calendar year-qtr. fixed effects. All variables are defined in Appendix A. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p-levels (two-tailed), respectively.

PANEL A: Industry Fixed Effects

	(1)	(2)	(3)
Dependent variable	*Forecast*	*Conference Call*	*NG*
DISTRACTION_DED	0.110	-0.158	0.158
	(0.983)	(0.699)	(0.940)
DISTRACTION_QUASI	-0.172***	-0.014	-0.151***
	(7.823)	(0.482)	(4.107)
DISTRACTION_TRAN	0.023	0.010	-0.026
	(0.592)	(0.186)	(0.398)
Industry Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Model Type	OLS	OLS	OLS
Adjusted R-squared	0.503	0.511	0.213
Number of Firm-Quarters	158,002	119,459	48,337

PANEL B: Industry-Calendar Year-Qtr. Fixed Effects

	(1)	(2)	(3)
Dependent variable	*Forecast*	*Conference Call*	*NG*
DISTRACTION_DED	0.088	-0.113	0.224
	(0.768)	(0.493)	(1.276)
DISTRACTION_QUASI	-0.139***	-0.004	-0.114*
	(3.359)	(0.084)	(1.915)
DISTRACTION_TRAN	0.015	0.068	0.036
	(0.321)	(1.007)	(0.499)
Industry-Cal-Year-Qtr. Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	No	No	No
Controls	Yes	Yes	Yes
Model Type	OLS	OLS	OLS
Adjusted R-squared	0.500	0.508	0.202
Number of Firm-Quarters	158,002	119,459	48,337

Table 6: Management Forecast Characteristics

This table reports the effect of shareholder distraction on characteristics of firms' management forecast. Column 1-4 reports OLS coefficient estimates and t-statistics based on robust standard errors clustered by firm. *PANEL A* reports the results with industry, quarter, and year fixed effects. *PANEL B* reports the results with industry*calendar year-qtr. fixed effects. *PANEL C* reports the results for the distraction of quasi-indexers with industry*calendar year-qtr. fixed effects. Variables are defined in Appendix A. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p-levels (two-tailed), respectively.

PANEL A: Industry Fixed Effects

Dependent variable	(1) *Forecast_Count*	(2) *Horizon*	(3) *Specificity*	(4) *Precision*
DISTRACTION	-0.061***	-0.464***	0.053	0.340*
	(3.280)	(6.839)	(0.288)	(1.835)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0.515	0.196	0.132	0.163
Number of Firm-Quarters	158,002	86,922	86,922	86,922

PANEL B: Industry-Calendar Year-Qtr. Fixed Effects

Dependent variable	(1) *Forecast_Count*	(2) *Horizon*	(3) *Specificity*	(4) *Precision*
DISTRACTION	-0.161***	-0.598**	-0.583	2.116**
	(2.954)	(2.200)	(0.777)	(2.544)
Industry-Cal-Year-Qtr. Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0520	0.169	0.132	0.167
Number of Firm-Quarters	158,002	86,922	86,922	86,922

PANEL C: DISTRACTION_ QUASI with Industry-Calendar Year-Qtr. Fixed Effects

Dependent variable	(1) *Forecast_Count*	(2) *Horizon*	(3) *Specificity*	(4) *Precision*
DISTRACTION_ QUASI	-0.155**	-1.052***	3.888***	2.487**
	(2.056)	(2.791)	(3.434)	(2.138)
Industry-Cal-Year-Qtr. Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0520	0.169	0.133	0.167
Number of Firm-Quarters	158,002	86,922	86,922	86,922

Table 7: Conference Call Characteristics

This table reports the effect of shareholder distraction on firms' conference call characteristics. Column 1-4 reports OLS coefficient estimates and t-statistics based on robust standard errors clustered by firm. *PANEL A* reports the results with industry, quarter, and year fixed effects. *PANEL B* reports the results with industry*calendar year-qtr. fixed effects. *PANEL C* reports the results for the distraction of quasi-indexers with industry*calendar year-qtr. fixed effects. Variables are defined in Appendix A. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p-levels (two-tailed), respectively.

PANEL A: Industry Fixed Effects

	(1)	(2)	(3)	(4)
Dependent variable	*WC*	*WC_POS*	*WC_NEG*	*Tone*
DISTRACTION	-0.041***	-0.030**	-0.015	-0.014**
	(3.418)	(1.970)	(0.978)	(1.981)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0.313	0.314	0.273	0.142
Number of Firm-Quarters	80,154	80,158	80,158	80,158

PANEL B: DISTRACTION with Industry-Calendar Year-Qtr. Fixed Effects

	(1)	(2)	(3)	(4)
Dependent variable	*WC*	*WC_POS*	*WC_NEG*	*Tone*
DISTRACTION	-0.065	-0.011	0.098	-0.053*
	(1.046)	(0.133)	(1.367)	(1.661)
Industry-Cal-Year-Qtr. Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0.311	0.312	0.283	0.161
Number of Firm-Quarters	80,154	80,158	80,158	80,158

PANEL C: DISTRACTION_ QUASI with Industry-Calendar Year-Qtr. Fixed Effects

	(1)	(2)	(3)	(4)
Dependent variable	*WC*	*WC_POS*	*WC_NEG*	*Tone*
DISTRACTION_ QUASI	-0.562***	-0.229**	-0.062	-0.328
	(6.442)	(1.996)	(0.613)	(1.567)
Industry-Cal-Year-Qtr. Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0.222	0.121	0.127	0.166
Number of Firm-Quarters	80,154	80,158	80,158	80,158

Table 8: Non-GAAP Characteristics

This table reports the effect of shareholder distraction on firms' Non-GAAP disclosure characteristics. Column 1-4 reports OLS coefficient estimates and t-statistics based on robust standard errors clustered by firm. *PANEL A* reports the results with industry, quarter, and year fixed effects. *PANEL B* reports the results with industry*calendar year-qtr. fixed effects. *PANEL C* reports the results for the distraction of quasi-indexers with Industry*Calendar Year-Qtr. fixed effects. Variables are defined in Appendix A. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p-levels (two-tailed), respectively.

PANEL A: DISTRACTION with Industry Fixed Effects

	(1)	(2)	(3)	(4)
Dependent variable	*CONSENSUS*	*PROFIRST*	*RECUR*	*MGRRECUR*
DISTRACTION	0.016	-0.262***	-0.113*	-0.232**
	(0.246)	(3.905)	(1.793)	(2.517)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0.069	0.316	0.067	0.023
Number of Firm-Quarters	8,764	8,764	8,764	8,700

PANEL B: DISTRACTION with Industry-Calendar Year-Qtr. Fixed Effects

	(1)	(2)	(3)	(4)
Dependent variable	*CONSENSUS*	*PROFIRST*	*RECUR*	*MGRRECUR*
DISTRACTION	-0.388**	-0.288	-0.369**	-0.180
	(2.533)	(1.590)	(2.568)	(1.221)
Industry-Calendar Year-Qtr. Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0.107	0.347	0.116	0.035
Number of Firm-Quarters	8,764	8,764	8,764	8,700

PANEL C: DISTRACTION_QUASI with Industry-Calendar Year-Qtr. Fixed Effects

	(1)	(2)	(3)	(4)
Dependent variable	*CONSENSUS*	*PROFIRST*	*RECUR*	*MGRRECUR*
DISTRACTION_ QUASI	-0.959***	-0.470**	-0.644***	-0.783***
	(4.779)	(1.996)	(3.255)	(2.844)
Industry-Calendar Year-Qtr. Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Model Type	OLS	OLS	OLS	OLS
Adjusted R-squared	0.109	0.348	0.117	0.036
Number of Firm-Quarters	8,764	8,764	8,764	8,700

Table 9: Cross-Sectional Analysis

This table reports analysis of cross-sectional variation of the effect of shareholder distraction on firms' likelihood of providing voluntary disclosure. *PANEL A* reports cross-sectional variation based on the level of Institutional Ownership. HIGHIO takes the value of 1 for firms in the highest quartile of institutional ownership, 0 otherwise. *PANEL B* splits the sample based on analyst coverage. HIGHCOV takes the value of 1 for firms in the highest quartile of analyst coverage. Column 1-3 reports OLS coefficient estimates and (in parentheses) t-statistics based on robust standard errors clustered by firm. Appendix A defines variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p-levels (two-tailed), respectively.

PANEL A: High Institutional Ownership

	(1)	(2)	(3)
Dependent variable	*Forecast*	*Conference Call*	*NG*
*DISTRACTION * HIGHIO*	-0.048**	-0.013	0.043
	(2.147)	(0.535)	(1.115)
DISTRACTION	-0.080***	-0.005	-0.114***
	(5.639)	(0.322)	(4.442)
HIGHIO	0.014***	-0.013***	-0.005
	(2.900)	(2.700)	(0.502)
Industry Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Model Type	OLS	OLS	OLS
Adjusted R-squared	0.500	0.508	0.202
Number of Firm-Quarters	158,002	119,459	48,337

PANEL B: High Analyst Coverage

	(1)	(2)	(3)
Dependent variable	*Forecast*	*Conference Call*	*NG*
*DISTRACTION * HIGHCOV*	-0.075***	0.028	-0.079**
	(3.407)	(1.076)	(2.162)
DISTRACTION	-0.072***	-0.019	-0.060**
	(5.202)	(1.227)	(2.325)
HIGHCOV	0.014***	-0.018***	0.026***
	(2.732)	(3.270)	(3.122)
Industry Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Model Type	OLS	OLS	OLS
Adjusted R-squared	0.506	0.514	0.221
Number of Firm-Quarters	158,002	119,459	48,337