Do they walk the talk: How do mutual funds portfolio firms adjust disclosure tone under the mandatory disclosure regulation

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Abstract

This paper investigates whether mutual fund portfolio firms manage the tone of annual or quarterly report following the Securities and Exchange Commission(SEC) mutual fund mandatory portfolio disclosure requirement. We estimate the abnormal positive tone(*ABTONE*) as the residual from a tone model that controls for firm quantitative fundamentals, including firm performance, risk and complexity. Utilizing the May 2004 SEC regulation as a quasi-experiment, we find that firms with higher mutual fund ownership engage in tone management in quarterly reports, with no significant change observed in annual reports. The effect is more pronounced in younger, smaller firms, and those with lower market to book ratios, higher accruals, and lower volatility. Additionally, the relation is stronger among firms held by mutual funds with a higher turnover ratio and lower concentration level. We also find that *ABTONE* is positively associated with upward perception management, such as meeting or beating earnings benchmarks. Further analysis shows that ABTONE is linked to positive future earnings and delayed positive market reactions, indicating that managers use tone strategically to communicate incremental positive information about firm performance.

1. Introduction

Extensive literature examines the influence of institutional investors on corporate behavior, however, limited research has specifically addressed their impact on the qualitative information of firm disclosure practices. For example, Amoozegar et al.(2020) find that institutional ownership dampens the firm overall tone in conference calls. Similarly, Blau et al.(2015) examine the length of the conference call text, they find a positive relation between stock returns and the tone in quarterly earnings conference calls, and suggest that the institutional ownership serve as a governance mechanisms that can affect the tone of conference calls. This study extends the existing literature by investigating the impact of mutual funds-typical institutional investor- on qualitative bahavior of firms' annual and quarterly reports. We utilize the 2004 May Securities Exhange Commission(SEC) regulatory change, which increased the disclosure frequency for mutual funds from annually to quarterly, as a quasi experiment to assess its impact on their portfolio firms' tone management behavior. This approach also helps to address potential endogeneity concerns.

One strand of literature focuses on the relation between institutional investors, managers and corporate policy. Large shareholders have incentives to monitor corporate entities(Shleifer and Vishny,1986). Shleifer and Vishny(1990) further show that institutional investors are positively associated with higher levels of corporate governance levels, acting in the alignment with investors' interests. Large shareholders are likely to exert selling pressure when managers fail to act in the best interest of shareholders(Admati and Pfleiderer,2009). Additionally, the presence of institutional investors generally leads to reduced sensitivity between managerial turnover and firm performance. The foreign institutional ownership has also been shown to promote long-term investment strategies(Bena et al.,2017). Importantly, beyond the impact of active institutional investors, Appel et al.(2016) find that passive mutual funds can also substantially influence corporate governance levels and enhance firms' long-term performance. primarily through their capacity to voice shareholder concerns. Subsequent studies contitually explore the role of voluntary disclosure, with Tsang et al.(2019) demonstrating that voluntary disclosure tend to be more significant and pronounced than those of domestic institutional investors.

Another strand of literature is related to qualitative information conveyed by firms in their disclosures. Managers distribute a considerable amount of information regarding their firms' activities, encompassing both quantitative and qualitative aspects. While numerous studies have examined how capital market participants respond to quantitative disclosures, recent research has started to explore the influence of qualitative verbal communication in various forms of disclosure, including financial new stories(Tetlock,2007; Tetlock et al.,2008), annual reports(Feldman et al.,2010; Loughran and McDonald, 2011), earnings press release(Davis et al.,2012; Demers and Vega,2010) and conference presentations(Bushee et al.,2011). Overall,

these findings support the view that the qualitative information is a cruicial implement of quantitative data in predicting firm performance and future returns. Research on qualitative analysis highlights that managers strategically adjust the tone of their disclosures, both positively and negatively. Mayew and Venkatachalam(2012) show that managerial vocal cues contain useful information about firm fundamentals. They argue that vocal cues and expressions play a crucial role in inferring both positive and negative emotions, such as happiness, enjoyment, tension and anxiety. Emotions, from the appraisal theory, is originated from a person's cognitive assessment of a situation and this person will use emotion to conveal information and provide valuable insights. Huang et al.(2014) and Arslan-Ayaydin et al.(2015) find that managers may employ an abnormal positive tone to mislead investors through qualitative disclosuers. Chen et al.(2018) indicate that the tone during conference calls often remains consistently negative in interactions between analysts and managers. However, the evidence is mixed.

The 2004 May regulation aims to enhance transparency and empower investors. However, its impact on mutual funds and their investee firms' disclosure behavior remains a critical area of exploration. Using vocabularies rom Loughran-McDonald Master Dictionary, this study aims to examine how the tone of disclosures made by companies invested in by mutual funds is affected by the mandatory portfolio disclosure rule enforced by the Securities and Exchange Commission (SEC) in May 2004. Given that managers have incentives to manipulate both quantitative information and qualitative information, say tone management, we analyze whether institutional investors exacerbate the problem. We aim to explore whether managers engage in tone management to reveal more information to mislead investor or to correct managers' misbehaviours to release information about firm real performance to investors. We expect to find firm managers using more vague words and employing abnormal positive tone in 10-Q fillings to avoid revealing information to manipulate investors' perceptions after the regulation change. We use the abnormal positive tone(*ABTONE*) as the tone management measure. This measurement is calculated as the residual from the univariate regression on firm characteristics(which will discussed in detail in Section3).

Our results are as follows. First, we find that firms with higher mutual fund ownership exhibit an increase in abnormal positive tone in quarterly(10-Q) reports, while there is no significant change in annual(10-K) reports. This is consistent with our hypothesis, suggesting that the requirement for mutual funds to disclose their portfolio holdings quarterly subjects their portfolio firms to heightened scruitiny, resulting in observable changes in the tone of their quarterly disclosures. The economic significance of this effect is also considerable, with firms experiencing an 8.2% increase in ABONE following the regulation change.

To further validate these baseline results, we conduct parallel assumption test. To address the possibility that these findings may be driven by other types of investors, we perform several placebo tests with four different placebo groups: index funds, voluntarily disclosed funds, voluntatily disclosed funds matched by a propensity score matching(PSM), and non-mutual fund investors. Additionally, we implement a time-series placebo test, using the year 2006 as the treatment year. The results indicate that our findings are statistically larger and more significant than those from placebo groups, reinforcing our original assertions.

We next investigate the impact of different types of mutual funds on the tone of disclosures. Given their varing trading frequency(turnover ratio) and portfolio concentration(as measured by Herfindahl-Hirschman Index), we posit that institutional investors with higher turnover ratio and lower concentration index may have great influence on their portfolio firms, resulting in more pronounced and statistically significant impacts. Our analysis reveals that changes in managerial tone is more pronounced within firms characterized by younger age, smaller size, lower market to book ratio, higher accruals and lower volatility. Additionally, we find more significant and stronger effects in firms with lower corporate governance levels(lower CEO ownership) and higher complexity levels(the number of non-missing items).

In our subsequent analysis, we investigate whether firms engage in abnormal positive tone for upward strategic management purposes and use this ABTONE to reveal favorable information about firm performance to investors. Our results support the conjecture that firms stratetically adopt a more positive tone to meet earnings benchmark and satisfy analyst forecast. This ABTON is positively related to firm future earnings and investors inoporate these information in their investment decisions, leading to delayed market reactions. Overall, these findings indicate that mutual fund portfolio firms have corresponding behavior changes in their qualitative disclosures, employing tone management as a means to present a more favorable outlook on their fundamental performance.

Our paper has following contributions. First, this paper adds to the existing research regarding the spillover effects of the mutual fund mandatory portfolio regulation and its impact on portfolio firms corporate managerial behavior. Second, our paper provides new insights into how managers respons to increased monitoring by using qualitative information and adjusting tone management after the increased monitoring, offering new insights on the principal-agent relationship. The implications of our research are significant for both for fund investors and regulators. Investors should exercise great caution regarding the credibility and reliability of portfolio firms' financial reporting in which they have invested. Additionally, our research also has policy implications, suggesting that regulators should consider potential unintended consequences of policies aimed at enhancing transparency.

The remainder of the paper is organized as follows. In section 2, we provides a discussion of the related literature and how we develop our hypotheses. In section 3, we outline the sample selection and measures used in this study. In section 4 and Section 5, we present the basline results and robustness tests. Section 6 and 7 represents the relation between the abtone in

strategic settings and firm future performance and market returns. In section 8, we present concluding remarks.

2. Literature review and hypothesis development

2.1 Insitutional background

U.S. mutual funds currently manage approximately \$28.6 trillion in actively managed assest(ICI, 2023). Investment decisions are primarily based on information disclosed in regulatoty fillings, prospectuses and shareholder reports. Given the relatively limited oversight of mutual funds, external entities, such as the U.S. Securities and Exchange Commission(SEC), are responsible for ensuring adequate monitoring and oversight to maintain the quality of mutual fund disclosures.

The Investment Company Act of 1940 mandates that mutual funds disclose their holdings information to both the SEC and investors. Initially, mutual funds are required to submit their shareholder reports and portfolio holdings on an annually and semiannually basis, using Forms N-CSR and N-CSRS, with submissions due within 60 days after the end of fiscal year or midyear. However, in May 2004, to enhance SEC oversight and improve the quality of these disclosures, the requirement for mutual funds to disclose portfolio holdings was updated. Under the new regulation, mutual funds are required to submit quarterly reports through Form N-Q at the end of first and third fiscal quarters. These reports provide detailed information on the holdings of mutual funds. The SEC recognized that, while mutual funds offer significant opportunities for investors, they also introduce substantial challenges, including increased complexity and amplified investment/counterparty risk"(SEC, 2016). In response to these comcerns, the SEC further increases the disclosure frequency to a monthly basis in 2016. These challenges are particularly relevant in the context of agency problems associated with delegated portfolio management, where managers may have inventives to manipulate performance or to obfuscate information to attract capital and raise fees. The portfolio disclosures provided by mutual funds offer critical insights into mamagers' investment decisions and portfolio holdings, which are valuable for investors in their evaluation process(Lakonishok et al., 1991; Agarwal et al.,2018).

The implementation of this mandatory portfolio regulation has significant impacts for fund performance(Agarwal et al.,2015) as well as spillover effects on the liquidity, innovation and investment sensitivity of portfolio firms(Agarwal et al.,2015; Agarwal et al.,2018;Sani et al.,2023). Du et al.(2022) also highlight the significant effects of transitioning from quarterly to monthly reporting on the corporate investment of portfolio firms. Given the increased monitoring resulting from the increased frequency of disclosures, we hypothesize that this regulation may also have a significant impact on the qualitative behavior of firms.

2.2 Textual analysis and tone management

While quantitative data plays a crucial role, it provides only an incomplete picture of a firm's economic performance. Researchers typically examine three key disclosure characteristics: the volume of information provided, the conveyed tone, and overall transparecy. These factors pertain to how much managers disclose, what they mean and how they communicate (Li,2010). Specifically, Tetlock(2007) and Tetlock et al.(2008) analyze the verbal communication in financial news stories, while Davis et al.(2011) and Demers and Vega(2010) explore the value -relevant insights embedded in the linguistic narratives of earnings press releases. Additionally, Bushee et al.(2011) investigate the voluntary communications of corporate managers in conference calls- emphasizing the role of verbal information in signaling.

The volume and the linguistic nuances of corporate disclosures are both found to be important(Healy and Palepu,2001;Li,2008). Conseqently, regulators and investors increasingly increased attention to this issue. Specifically, the SEC has mandamated that public firms release prospectuses and improve their readability to enhance investor comprehension. In October 1998, the SEC proposed guidelines for plain English disclosures, emphasizing principles such as concise sentences, everyday language, active voice, bullet points, and minimizing the use of complex technical business terms or double negatives.

Several studies examine the readability of reports, particularly the Management and Discussion part(MD&A) section, which is specifically designed to provide investors with narrative explanations of financial statements and contextual analysis to aid in the interpretation of financial information(SEC, 2003). In addition to the MD&A, forward-looking statements(FLS) also play a crucial role in disclosure, offering investors insight into the company's future prospects. Moreover, the tone of conference calls are also manipulated by communicate specific information. For managers to example, Mayew and Venkatachalam(2012) analyze vocal cues from conference calls using audio data from Thomson Reuters Street Events database. They find that vocal cues, including intonation, volume, speed, and inflection(Mehbrabian, 1971), convey important information about managers' emotional states, which are positively associated with firm future performance. Nonverbal cues, such as facial expressions and gestures, also significantly contribute to how emotions and messages are conveyed. For example, variations in voice, including changes in volume or tone, or even a monotone delivery, can reflect emotional undercurrents that may not be conveyed through words alone. Integrating qualitative analysis into financial disclosures enhances the depth of the understanding, as managers often have strategic incentives to communicate specific information to investors, a concept encapsulated by Kartik's(2009) "Almost-cheap talk" model. This model posits that managers often use inflated language when engaging in strategic communication.

In addition to the analysis of the MD&A, the readability of the entire annual report is critical in textual analysis. A large strand of literature has assessed the readability of the annual reports(Smith and Smith,1971; Li, 2008), with determinants such as firm size, market-to-book, age, business volatility and operation complexity being influential factors(Li, 2008; Li,2010). Loughran and McDonald(2011) analyze 10-K filling and find the file size is a reliable indicator of readability, with a larger size often correlating with a poor corporate information environment. The readability of annual reports is linked to a firm's current performance, with managers potentially manipulating report content to mask poor performance(Bloomfield, 2002). However, the relationship between readability and firm performance is not clear, as annual reports contain both financial data and information on other firm fundamentals. Li(2008) extends the literature by focusing on earnings persistence to examine the implication of readability, using the Fog index and document length as measures of readability.

In financial markets, managers disclose information about a firm's current and future performance, both positively and negatively, often influenced by their emotional reponses to company-related events. Investors gain insights these disclosures, interpretating them alongside with private or public information. For example, when managers anticipate positive outcomes, they may adopt an optimistic tone to highlight favorable information. Conversely, managers may also deliberately employ an unusually positive tone to exaggerate performance and potentially mislead investors.

This strategic manipulation of language, commonly referred to as rone management, can significantly affect a a firm's performance, valuation, and reputation. Previous studies have demonstrated that the tone of disclosures conveys incremental information beyond quantitative performance measures, with a positive relation between disclosure tone and firm performance (Feldman et al., 2010; Davis et al., 2012). Li(2010) find that the average tone in forward-looking statements in 10-K and 10-Q reports correlates with future earnings, using a Bayesian statistical learning approach. Other studies also show a positive correlation between the optimism in disclosures and short-term market response(Henry, 2008; Demers and Vega, 2008; Davis et al.,2008). Specifically, Davis et al.(2008) argue that mangers strategically use both optimistic and pessimistic language in earnings press releases to signal firm performance, with increased optimism linked to higher future return on assets. In contrast, Huang et al. (2014) illustrate that firms can manipulate the tone of their disclosures by using an abnormal positive tone to mislead investors, which is associated with negative future returns. Despite the extensive research in this area, the impact of mutual funds on corporate tone management practices remains under explored. This paper aims to address this gap by examining how the frequency of disclosures affects corporate managers' behavior, placing emphasis on qualitative analysis and tone management over quantitative metrics.

Within the filed of textual analysis, dictionary-based approach is more commonly used than machine learning methods, which often requires a predetermined 'training set'(Kearney and Liu,2014). Prior research, such as that by Tetlock(2007) and Engelberg et al.(2011) utilize the General Inquirer(GI) dictionary, while Rogers et al.(2011) and Henry and Leone(2015) rely on the DICTION dictionary. More recently, Loughran and McDonald(2011) develop a dictionary tailed for financial contexts, which is the primary tool applied in our analysis. Using this dictionary, we calssify words as positive words as negative if they are immediately proceeded by negation words, such as no, not, none, neither and never.

3. Sample selection and research design

3.1 Sample and data

We obtain textual data from firm annual(10-K) and quarterly(10-Q) reports from 2000 to 2008. For lexical analysis, we utilize the word list dictionary developed by Loughran and McDonald. Firm financial data is obtained from the Compustat database, while stock returns are retrieved from the CRSP database. Analysts' earnings forecasts are acquired from the I/B/E/S database. Additionally, we obtain mutual fund information, including fund turnover ratios, net asset value, fund returns, and investment objectives from the the CRSP Mutual Fund Database. Following previous literature(Agarwal et al.,2015, Agarwal et al.,2018, Sani et al., 2023), we start with all actively managed(AM) funds from the CRSP, which are subsequently merged with the Thomson Reuters S12 database using the fund identifier(WFICN) to obtain comprehensive mutual fund portfolio holdings and disclosure dates. We exclude passive funds(index funds) and funds that have already voluntarily disclosed on a quarterly basis, which are then used as placebo groups in later analysis.

The sample includes firms from Compustat with positive assets and non-missing information on tone management data for both the pre- and post-event periods. Specifically, we include firm data four years before and after the regulation change, excluding the event year/quarter. Our final sample consists of 1,265 funds and 7,341 firms for the quarterly analysis and 1,109 funds and 6,904 firms for the annual analysis(see Appendix A and B for further details). For each year and quarter, all financial variable are winsorized at the 1 percent level to mitigate the influence of outliers.

We carefully identify funds and disclosure dates from multiple sources, including Thomson Reuters and the CRSP Survivor-Bias-Free US Mutual Fund Database. Voluntarily disclosed funds are omitted and treated as the placebo group. Our sample mainly investigates funds that increased their disclosure frequency to quarterly following the SEC regulatory change.

To differentiate between treated and control firms, we calcultate the portfolio firm-month ownership for all affected funds in our sample, drawing upon methodologies employed by Agarwal et al.(2015b), Agarwal et al. (2018) and Sani et al. (2023). The percentage of firms owned by affected funds is determined by summing the ownership percentages of the selected

funds at the end of each month for the chosen firms. The cumulative ownership is then averaged over 12 months to obtain the final measure of Affected Fund Ownership. Firms are categorized as treated if their Affected Fund Ownership is above-median, and as control if their ownership if below the meadian. This classification results in 2,609 unique treated firms and 4,732 control firms. Table 1 presents the summary statistics for the firm and fund characteristics in our final sample.

3.2 Variable measurements

3.2.1 Abnormal positive tone calculated using LM model

Following Huang et al.(2014), we decompose *TONE* into two components: the normal component(*NTONE*), which reflects a neutral description of the available information regarding a firm's fundamentals, and the abnormal component(*ABTONE*), which is the key variable in our analysis. *ABTONE* proxies for the managerial tone that may either inform or mislead investors. We adopt the word classification proposed by Loughran and McDonald(2011) and classify the frequency of positive and negative words appearing in 10-Q and 10-K report. *TONE* is constructed as the ratio of the frequency of positive and negative words to the total number of nonnumeric words. Positive tone can arise for several reasons. It may reflect a genuine expression of good curent and expected future financial performance. Alternatively, it could represent a strategic bias, where managers use positive tone to signal private information about firm favorable future performance to investors- information that might not be captured through existing quantitative disclosures due to constraints imposed by Generally Accepted Accounting Principles(GAAP). Alternatively, positive tone could be used to obscure poor firm performance or to mislead investors about the firm's future prospects.

We run cross-sectional regression of total *TONE* on several key factors, including firm characteristics such as growth opportunities and operating risks, as specified in regression (1). We also include three performance benchmarks, *Loss*, *ΔEARN* and *AFE*. *Loss* is an indicator variable, equals 1 if earnings before extraordinary items(*EARN*) is negative ,and 0 otherwise. *ΔEARN* is the change of earnings before extraordinary items divided by beginning total assets. This variable is used to capture the firm's profitability trend. *AFE* refers to the analyst forecast error, calculated as the difference between the *IBES* actual earning per share(*EPS*) and the median of most recent analyst's forecast, divided by stock price of fiscal year end. We also include *AF*, which represents analysts' forecast for the next year's EPS, adjusted for the stock price at fiscal year end. Firm fundamentals such as firm profitability(*EARN*), stock returns(*RET*), book to market ratio(*BTM*), the the volatility of stock returns(*STD_RET*), and the volatility of earnings(*STD_EARN*) are also included. These variables capture firm's cash flows generated in the current period, the present value of future cash flows beyond the current accounting numbers, and current operating and business risk. This comprehensive set of explanatory variables help to identify the factors influencing the tone of disclosures and their potential implications for investor perception and firm performance.

The abnormal positive tone is estimated as the residual of the following regression:

 $Tone_{it} = \beta_0 EARN_{it} + \beta_1 RET_{it} + \beta_2 SIZE_{it} + \beta_3 BTM_{it} + \beta_4 STD_RET_{it} + \beta_5 STD_EARN_{it} + \beta_6 \Delta EARN_{it} + \beta_7 AFE_{it} + \beta_8 AF_{it} + \beta_9 LOSS_{it} + \alpha_i + \alpha_{ind} + \varepsilon_{it} (1)$

Where $EARN_{it}$ = earnings before extraordinary items scaled by lagged total assets;

 $EARN_{it}$ = stock returns calculated using CRSP monthly return data;

 $SIZE_{it}$ = logarithm of one plus market value of equity at fiscal year-end;

 BTM_{it} = book-to-market ratio measured at fiscal year-end;

 STD_RET_{it} = standard deviation of monthly stock returns over the fiscal year;

STD_EARN_{it} = standard deviation of *EARN* calculated over the fiscal year;

 $\Delta EARN_{it}$ = change of EARN.

3.2.2 Regression specification

By construction, *ABTONE* is unrelated with firm current financial perfoamance and fundamentals. To assess whether firm's tone management behavior has shifted following the the SEC's mandatory portfolio disclosure regulation, we employ a difference-in-difference(DiD) approach. Specifically, we focus on treated firms, characterized by high mutual fund ownership, and compare them to control firms, which are marked by low mutual fund ownership. The regression model executed for analysis is specified as follows:

 $ABTONE_{it} = \beta_1 Treat_i * Post_t + \beta_2 Size_{it} + \beta_3 EARN_{it} + \beta_4 Leverage_{it} + \beta_5 STDRET_{it} + \beta_6 BTM_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it}$ (2)

Where i and t denote firm and year/quarter, respectively. $ABTONE_{it}$ represents the tone management measure for firm i in year/quarter t. $Treat_i$ is an indicator variable, equals one for treated firms (i.e.,firms with high mutual fund ownership) and zero for control firms (i.e.,firms with low mutual fund ownership). $Post_t$ is an indicator variable, equals one for fiscal years following the SEC mandatory portfolio regulation in May 2004, and zero for years prior to the regulation. α_i , α_t , α_{ind} represent firm fixed effects, year-quarter fixed effects, and industry fixed effects, respectively. The primary coefficient of interest is β_1 , which captures the the change in tone management following the SEC regulation, as compared to control firms.

4. Empirical results

4.1 Summary statistics

We present the summary cross-sectional statistics for variables used in our analysis, reported on a quarter basis(Panel A of Table 1) and on an annual basis(Panle B of Table 2). The mean(median) of *TONE* for the quarterly data is (-0.56) and (-0.59), indicating an overall pessimistic tone in 10-Q reports. Managers report more negative words than positive words, which is consistent with the findings in the annual data and aligns with the results of Loughran and McDonald(2011). The mean of *ABTONE* is 0, reflecting the discretionary nature of this

variable, which captures abnormal tone. We use this variable because this proxy has little correlation with quantitative measures of firm financial fundamentals, making it a suitable indicator of managerial tone.

Table 2 reports the collrelation matrix for major variables used in our main analyses,. Panel A presents the correlation matrix for the quarterly data, while Panel B reports the results for the annual data. The results show that *ABTONE* is highly positively correlated with the overall *TONE* and less correlated with firm fundamental characteristics. In contrast, *TONE* shows a stronger correlation with firm financial characteristics. These findings suggest that *ABTONE* serve as a better proxy for discretionary tone.

Table 3 reports the estimation results of regression(1). Results indicate that *TONE* tends to be more positive for larger firms, those with lower profitability, less volatile stock returns and stronger performance relative to analysts' earnings forecast. The finding differs from Loughran and McDonald(2011), as our analysis shows that, managers tend to use more negative words than positive ones in our setting. The normal tone, *NTONE*, is the predicted value from regression(1), while the abnormal positive tone, *ABTONE* is the residual. The main proxy, *ABTONE* is designed to be unrelated to firm fundaments, operating risk and complexity.

4.2 Do firms engage in tone management after the regulation?

We next explore whether treated firms engage in abnormal positive tone manipulation after the regulatory change. Table 4 presents the estimation results from regression (2), with the quarterly analysis reported in column(1) and the annual analysis in column(2). We control for SIC industry, firm and year#quarter fixed results, and our results are also clustered at both the firm and year#quarter level to account for cross-sectional and time-series errors. Results show that firms with higher mutual fund ownership significantly increase their use of abnormal positive tone(*ABTONE*) on a quarterly basis, while the effect is insignificant on an annual basis. This suggests that, in response to the increased monitoring by fund managers, firms use *ABTONE*, which is less correlated with firm characteristics, to reveal information to investors using firm reports released more frequently. Specifically, firms with higher mutual fund ownership experience a 8.2% increase of *ABONE* after the regulation. The contrast between the quarterly and annual analysis highlights the significant impact of more frequent disclosures, demonstrating that increased transparency and tigher monitoring lead firms do react more promptly on a quarterly basis.

4.3 Assessing parallel trends and the time trend of tone management

In this section, we examine the timing of changes in firm abnormal positive tone(*ABTONE*) surrounding the SEC regulation to test the parallel trend assumption. The parallel trend assumption posits that, in the absence of the regulatory change, treated and control firms would follow similar trend, conditional on relevant covariates.

To test this assumption, we modify our regression model by incorporating four indicator variables representing the years preceding the regulation (Pre(4), Pre(3), Pre(2) and Pre(1) in regression(3). We run the regression and plot the results in Figure1, indicating statistically indistinguishable pre-treatment trends in *ABTONE* for treated and control firms. The results, as depicted in picture1, show that there is no significant difference between the two groups prior to the regulation. However, a marked divergence in trends is observed after the regulation change. This test of the parallel trend assumption lends support to our baseline results, confirming that the observed changes in tone management behavior of portfolio firms are attributable to the regulation itself.

$$\begin{split} ABTONE_{it} &= \beta_1 \operatorname{Treat}_i * \operatorname{Pre}_4 + \beta_2 \operatorname{Treat}_i * \operatorname{Pre}_3 + \beta_3 \operatorname{Treat}_i * \operatorname{Pre}_2 + \beta_4 \operatorname{Treat}_i * \operatorname{Pre}_1 + \\ \beta_5 \operatorname{Treat}_i * \operatorname{Post}_1 + \beta_6 \operatorname{Treat}_i * \operatorname{Post}_2 + \beta_7 \operatorname{Treat}_i * \operatorname{Post}_3 + \beta_8 \operatorname{Size}_{it} + \beta_9 \operatorname{EARN}_{it} + \beta_{10} \\ Leverage_{it} + \beta_{11} \operatorname{STDRET}_{it} + \beta_{12} \operatorname{BTM}_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it} \end{split}$$

Where $ABTONE_{it}$ stands for firm tone management measure on a quarter basis. $Pre_4 Pre_3$ Pre_3 and Pre_1 stands for quarters before the event, while $Post_1$ represents quarters after. All the other control variables are included. Firm and year#quarter fixed effects are included and errors are clustered at firm level.

4.4 Placebo tests using unaffected funds and investors

To further substantiate our baseline results, we employ several alternative strategies to address the potential for differential trends in abnormal positive tone(*ABTONE*) between treated and control firms that may be unrelated to the SEC's disclosure requirements. Specifically, we compare firms with high ownership by affected funds to those with ownership by four control groups whose portfolio disclosure frequency remained unchanged by the SEC regulation. This approach helps mitigate concerns that any general trend in ABTONE among firms with high institutional ownership is driving our results. The first control group is index funds, which are passively managed and lack proprietary information regarding their investment strategies. The second group comprises non-mutual fund institutional invetors, who are subject to different disclosure requiremet(Form 13F). The third control group is voluntarily disclosed funds, which had already been disclosing portfolio holdings prior to the regulation. While this group may raise concerns regarding endogeneous disclosue choices, we address this concern by constructing a fourth placebo group of voluntarily disclosed funds matched using Propensity Score Matching(Ge and Zheng, 2006). We match funds based on characteristics such as turnover ratio, return, size, and expense rate to form a final comparison group.

To conduct this analysis, we extend our regression model by incorporating indicator variables for firms with high ownership by unaffected placebo groups. We generate an indicator variable(*PlaceboTreat*), for each group by calculating firm-month ownership and a *Post* variable, equals one for fiscal quarters after the SEC reulation and 0 before the regulation. The interaction term(*PlaceboTreat*Post*) is then added to the regression model in regression(4). This coefficient captures the impact of any other shocks that might affect firm tone management behavior. The difference between the interaction term for treated firms(*TreatPost*) and placebo groups (*PlaceboTreat*Post*) helps to isolate the effect of the change in disclosure frequency due to the SEC regulation. The discrepancy between these two coefficients provides an estimate of the impact of increased disclosure frequency by mutual funds on firm tone management, while accounting for the ownership patterns of other institutional control entities.

 $ABTONE_{it} = \beta_1 PlaceboTreat_i * Post_t + \beta_2 Size_{it} + \beta_3 EARN_{it} + \beta_4 Leverage_{it} + \beta_5$ $STDRET_{it} + \beta_6 BTM_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it} (4)$

Where i, t denote firm and quarter, respectively. $ABTONE_{it}$ represents the tone management measure, which is estimated as the residual from regression(1). $Treat_i$ is an indicator variable, that takes the value of one for treated firms (firms with elevated mutual fund ownership) and zero for control firms (firms with low mutual fund ownership). *Post_t* is an indicator variable, takes the value of one for fiscal quarters subsequent to the SEC mandatory portfolio regulation in May 2004, and zero for quarters before the regulation. We also include the the indicator variable *PlaceboTreat_i*, representing high ownership firms from the placebo group. α_i , α_t , α_{ind} represent firm fixed effects, year-quarter fixed effects, and industry fixed effects, respectively.

Table5 represents the results. Statistically significant results are found in the case of voluntarily disclosed funds(column(2) and (3)), and non-MF institutional investors(column(4), as evidenced by last the two rows. In column(5), the results are also more pronounced when comparing with placebo period 2006. For index funds, significant results are also observed, although index funds employ a passive investment approach. This suggests that portfolio firms with higher ownership by index funds also experience changes in quantitative management. Previous studies argue that passive institutions may lack strong incentives to monitor firms, potetially weakening corporate governance (Appel et al.,2016). As a result, portfolio firm mangers may engage in strategically tone management-*ABTONE* to disclose favorable information to investors. Overall, the evidence provides support to our findings, suggesting that the observed results are driven not only by institutional ownership but also by the increased disclosure frequency manadated by the SEC regulation. Our results are unlikely to be influenced by unobserved shocks surronding the SEC regulation, further reinforcing the validity of our conclusions.

5. Cross-sectional tests

5.1 Heterogeneity in fund characteristics

In this section, we explore the role of fund heterogeneity in shaping firm's tone management bahavior. Specifically, we examine whether the effect of mutual fund ownership on the abnormal positive tone of firms is influenced by the type of funds involved. Previous literature offers insights into this issue. For example, Choi(2022) highlights that funds have stronger incentives to manipulate, such as those holding more liquid or harder-to-value securities, exhibit more pronounced effects. In a similar vein, Kacperzyk et al.(2005) suggest that funds with more concentrated portfolios face higher costs in collecting information on portfolio firms, which could affect their behavior. Additionally, Fulkerson and Riley (2019) observe a positive relation between portfolio concentrated ownership could reduce a fund's incentive to actively monitor firms, as it may lead to a stronger focus on short-term gains, even if this results in more aligned interests. To capture portfolio concentration, we utilize the Herfindahl-Hirschman index(*HHI*), which is computed as the sum of squared weights assigned to individual stocks within the fund's portfolio.

We further account for the potential influence of fund investment horizons on one management. A short-term investor is more likely to engage in frequent buying and selling of investments. Gasper et al.(2005) propose that funds with higher turnover ratios may have a more immediate impact on firm behavior. While Cremers and Pareek(2016) find a higher turnover ratio is associated with firm under performance. In this context, we measure fund turnover as the percentage of holdings that change between consecutive quarterly reports. To account for fluctuations over time, we average this turnover rate over the last four quarters.

We hypothesize that funds characterized by higher portfolio turnover and lower Herfindahl index have more substantial influence on the tone management behavior of their portfolio firms. Table 6 present the results, we find more pronounced results of abnormal positive tone management among firms held by funds with higher turnover ratios(column 1) and less concentrate portfolios(column2). Our findings align with previous research suggesting that firms in mutual fund portfolios are more inclined to employ abnormal positive tone when communicating favorable performance to investors. This approach is particularly prevalent when these funds exert stronger monitoring and exhibit lower levels of governance. Our results are consistent with previous studies that mutual fund portfolio firms are more likely to use abnormal positive tone to convey information to investors about firm good performance to generate returns when these funds impose greater monitoring and have a lower level of governance.

5.2 Heterogeneity in firm characteristics

To further understand the determinants of engagement in abnormal positive tone(ABTONE), we conduct a series of cross-sectional tests examining the impact of firmspecific characteristics. Prior research suggests that several fators influence the readability and tone of firm annual reports, including firm size, market to book, firm age, business volatility, complexity of operations, and firm-specific events such as merges and acquisions (M&A) and seasoned equity offering (SEO) (Li, 2008). We categorize our sample based on firm Size as it reflects the operational scale and business environment of a company. Firm size is measured as the natural logarithm of market value of equity. Additionally, we incorporate the market to book ratio, which is defined as the market value of equity plus book value of liabilities divided by the book value of total assets. This ratio captures a firm's growth potential and investment opportunity. Firm Age is calculated as the number of years since the firm first appeared in the CRSP monthly return file. We also examine stock return volatility, measured as the standard deviation of stock returns over the fiscal year(STDRET) and earnings volatility, calculated as the standard deviation of operating earnings over the fiscal year(STDEARN). Following Li(2010), we investigate the relationship between firm accruals and ABTONE. Li(2010) finds that firms with lower accruals tend to engage in more forward-looking, optimistic statements and we hypothesize that a similar pattern holds for ABTONE.

The results are presntend in Table7. We find that smaller and younger firms, firms with lower market to book ratio, lower volatility, and higher accruals are more likely to engage in abnormal positive tone management after the regulation change. The findings suggest that smaller firms may exhibit a higher level of ATBONE because they tend to be less cautious in their quarterly reports, as they face lower political and legal cost due to their lower visibility(Watts and Zimmerman, 1986). Additionally, firms with high market to book ratios, typically associated with high growth and greater uncertainty about future performance, may adopt a more cautious approach in their reports, thus exhibiting a negative relation between volatility and abnormal positive tone. Regarding the volatility of operations, firms operating in more volatile business environments are less likely to be more cautious in their reporting due to heightened information asymmetry, which leads to a negative relation between business volatility and tone management. Younger firms, facing more uncerntainties, are often more cautious in their reports and therefore engage in less abnormal positive tone. As for accruals, they serve as a proxy for firm economic conditions. We posit that managers, recognizing the implications of accruals for future performance, may be incentivized to mislead investors, which would result in a positive relation between accruals and ABTONE. This aligns with with D'Augusta and Deanglis(2020), who suggest that managers manipulate both numbers and language in financial reports to misrepresent a company's economic performance.

We also explore the influence of corporate governance and firm operation complexity on firm tone management, following Li(2010). Corporate governance level is measured by the total CEO ownership of the firm, while operation complexity is quantified as the total number of non-missing financial items in the Compustat database. Corporate governance is generally positively correlated with firm performance, and we hypothesize a negative relation between the CEO ownership level and abnormal positive tone. CEO ownership is calculated as the percent of the firm's stock owned by the CEO, using data from the Execucom database(Bhagat and Bolton,2008). We present our results in Table 8 and we find that firms with lower corporate governance level(i.e.,higher CEO ownership) tend to engage more in strategic tone management, which aligns with our original hypothesis. Furthermore, firms with greater operational complexiy(indicated by a larger number of non-missing items in financial reports) are more likely to engage in abnormal positive tone management, as they provide more complex disclosures.

6. Abnormal positive tone in strategic settings

The previous results suggest that firms with higher mutual fund ownership exhibit abnormal positive tone(ABTONE) following the mandatory portfolio regulation. This raises the question of whether managers exploit tone manipulation to either highlight positive private information or to obscure negative future performance. Following Huang et al. (2014), we examine whether abnormal positive tone is associated with upward earnings perceptions, specifically in setting where managers aim to meet or exceed earnings benchmarks. We test the relation between ABTONE and the likelihood of just meeting or beating earnings benchmarks(JMBE). In particular, we consider two scenarios in which managers may manipulate earnings: one where earnings are manipulated to just meet or beat prior year's earnings(JMBE change), and another where adjusted to analysts' one earnings are meet consensus forecasts(JMBE analyst)(Burgstahler and Dichev, 1999; Degeorge, Patel, and Zeckhauser, 1999). We run the following regression.

 $JMBE_{it} = \beta_1 \ ABTONE_{it} + \beta_2 \ Size_{it} + \beta_3 \ EARN_{it} + \beta_4 \ Leverage_{it} + \beta_5 \ STDRET_{it} + + \beta_6$ $BTM_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it} \ (5)$

The dependent vaibale $JMBE_{it}$ includes two variables. $JMBE_change$ is an indicator variable equals one if the change in earnings divided by the beginning market value of equity is between 0 and 0.005, and zero otherwise. $JMBE_analyst$ is an indicator variable that equals one if firms' analysts consensus forecast error AFE is between 0 and 0.01, and zero otherwise. All the other control variables are defined in previous section.

Table9 represents estimation results of regression(5), with *JMBE_change* in column(1) and *JMBE_analyst* in column(2). In both setting, we find that ABTONE is significantly associated with a higher likelihood of JMBE, indicating that managers manipulate tone in 10-

Q reports to influence investor perceptions upward. The economic significance of these effects are also notable. One standard deviation of change in ABTONE is associated with 24.7% increase in change of earnings and 32% increase in analyst consensus forecast. The positive association between abtone and JMBE observed in this study can be interpreted as firm managers strategically employing optimistic language to manage investor expectations and achieve critical earnings benchmarks. While Huang et al.(2014) links such behavior to opportunistic reporting, the concurrent positive relationship with future earnings suggests that this narrative framing reflects genuine confidence in forthcoming performance rather than deliberate misrepresentation.

7. Does abnormal positive tone predict future earnings and relate to positive market returns?

So far, we find firm managers engage in abnormal positive tone management after the mutual fund portfolio mandatory regulation and use the *ABTONE* to influence investor perception upward. The final goal of such strategic actions is to influence firm performance ans stock valuations. Therefore, we test whether this strategic ABTONE is to mislead investors, or to reveal more incremental information about firm positive performance beyond quantitative datas. We then first examine the relation between the abnormal positive tone and future one-quarter, two-quarters and three-quarters earnings in the following regression:

 $EARN_{it+n} = \beta_1 \ ABTONE_{it} + \beta_2 \ Size_{it} + \beta_3 \ EARN_{it} + \beta_4 \ Leverage_{it} + \beta_5 \ STDRET_{it} + \beta_6 \ BTM_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it} \ (6)$

Where n = 1,2, or 3

We also test the immediate and delayed market reactions after the quarterly reports in the following regression:

 $\begin{aligned} \text{CR}(-1,+1) &= \beta_1 \ ABTONE_{it} + \beta_2 \ Size_{it} + \beta_3 \ EARN_{it} + \beta_4 \ Leverage_{it} + \beta_5 \ STDRET_{it} + + \beta_6 \\ BTM_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it} \ (7) \\ \text{CR}(+2,+61) &= \beta_1 \ ABTONE_{it} + \beta_2 \ Size_{it} + \beta_3 \ EARN_{it} + \beta_4 \ Leverage_{it} + \beta_5 \ STDRET_{it} + + \\ \beta_6 \ BTM_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it} \ (8) \\ \text{CR}(+2,+121) &= \beta_1 \ ABTONE_{it} + \beta_2 \ Size_{it} + \beta_3 \ EARN_{it} + \beta_4 \ Leverage_{it} + \beta_5 \ STDRET_{it} + + \\ \beta_6 \ BTM_{it} + \alpha_i + \alpha_t + \alpha_{ind} + \varepsilon_{it} \ (9) \end{aligned}$

Table 10 presents the estimation results of regression (6),(7),(8), and (9), with the first three colums representing future earnings outomes, and last three columns showing cumulative stock returns. The results indicate that the coefficients on ABTONE arepositive and significant across the three future earnings measures, with values of 0.004 and 0.003, respectively, suggesting that abnormal positive tone is associated with positive future firm performance. For immediate market returns, we do not find significant market reactions. However, we observe delayed positive market reactions beginning from the second day in the 60-day and 120-day cumulative

stock returns. These findings provide empirical support to our hypothesis that managers use abnormal positive tone as a signaling mechanism to convey favorable future performance to investors. Furthermore, the delayed market reactions suggest that investors graduallt incorporate this information, ultimately resulting in positive cumulative stock returns over longer horizons.

8. Conclusion

This paper investigates the spillover effects of mutual fund ownership on the corporate behaviorof portfolio firms, particularly in relation to their qualitative disclosures. Our findings indicate that firms with higher mutual fund ownership exhibit an increase in abnormal positive tone in their quarterly reports following the implementation of mandatory portfolio disclosure regulation. And this tone management behavior is positively correlated with strategic upward manipulation, including efforts to meet or exceed earnings benchmarks and analysts' consensus forecasts. Furthermore, we find the ABTONE is associated with positive future earnings and delayed maketr reactions, indicating that managers use tone management to reveal incremental firm information about firm performance.

This paper makes several contributions. First, we enhance the understanding of the influence of institutional investors on the qualitative behavior of firms by examining the spillover effects of mutual fund portfolio disclosure regulations on the abnormal positive tone management of corporate communications. Second, we contribute to the principal-agent theory by exploring how managers modify their tone management in response to increased monitoring by institutional investors. The findings suggest that managers use abnormal positive tone to incrementally disclose favorable information about future firm performance, thereby signaling improved prospects to investors. These insights are particularly valuable for both investors and policy makers. For investors, the findings underscore the importance of being aware of potential tone manipulation in firms disclosures. For policymakers, the study highlights the unintended consequences of regulations designed to enhance transparency, suggesting that disclosure requirements can incentivize firms to engage in strategic narrative management to shape investor perceptions.

Table 1: Summary statistics

Panel A: Quarterly data

VarName	Obs	Mean	Median	SD	Min	Max
TONE	108441	-0.560	-0.590	0.181	-1.000	1.000
ABTONE	108441	0.000	-0.018	0.166	-0.627	1.789
MFO	108470	0.061	0.002	0.132	0.000	0.859
Size	108470	5.821	5.790	2.010	0.000	11.119
EARN	108470	-0.009	0.004	0.061	-0.328	0.100
LnAsset	108470	6.159	6.139	2.036	0.000	12.002
q	108470	1.908	1.335	1.598	0.000	10.391
Leverage	108470	0.197	0.131	0.223	0.000	1.037
PPE	108470	0.281	0.067	0.388	0.000	1.712
AFE	108470	-0.560	0.000	5.842	-58.275	24.961
AF	108470	-0.607	0.000	6.756	-72.288	28.636
BTM	108470	0.645	0.510	0.654	-0.991	3.875
EARN	108470	-0.009	0.004	0.062	-0.339	0.103
STDEARN	108470	0.036	0.018	0.050	0.000	0.301
$\Delta EARN$	108470	-0.001	0.000	0.039	-0.216	0.216
RET	108470	0.095	0.065	0.293	-0.405	0.734
STDRET	108470	0.145	0.116	0.103	0.000	0.574
Loss	108470	0.298	0.000	0.458	0.000	1.000
JMBE change	108470	0.331	0.000	0.471	0.000	1.000
JMBE analyst	108470	0.066	0.000	0.249	0.000	1.000

Panel B: Annual data

VarName	Obs	Mean	Median	SD	Min	Max
TONE	35157	-0.497	-0.523	0.181	-1.000	1.000
ABTONE	35179	0.000	0.000	0.146	-0.750	1.634
MFO	35179	0.093	0.002	0.246	0.000	1.430
Size	35179	5.763	5.728	2.022	0.000	11.215
EARN	35179	-0.020	0.010	0.187	-1.012	0.366
LnAsset	35179	6.146	6.118	2.016	0.000	12.052
q	35179	1.845	1.309	1.493	0.000	9.798
Leverage	35179	0.204	0.117	0.256	0.000	1.340
PPE	35179	0.395	0.282	0.386	0.000	1.649
AFE	35179	-0.748	0.000	6.839	-66.209	24.596
AF	35179	-0.501	0.000	5.931	-62.419	27.378
BTM	35179	0.682	0.529	0.722	-1.209	4.182
EARN	35179	-0.020	0.010	0.188	-1.024	0.362
STDEARN	35179	0.087	0.043	0.126	0.000	0.802
$\Delta EARN$	35179	-0.002	0.000	0.038	-0.243	0.213
RET	35179	0.092	0.065	0.310	-0.405	0.734
STDRET	35179	0.148	0.119	0.103	0.000	0.562
Loss	35179	0.275	0.000	0.446	0.000	1.000

This table presents descriptive statistics for the main variable used in the main analyses. All continuous variables are winsorized at the 1% and 99% levels. All the variable definitions are shown in Appendix A.

	Variables Definitions and Measurements
Variable	Definitions
MFO	Affected fund ownership, calculated as the firm-month ownership by all affected funds over the year prior to May 2004:
TONE	The total tone of firm using 10-k report, calculated as (#positive words- #negative words)/total nonnumerical words
ABTONE	The abnormal positive tone estimated as the residual from equation(1); Firm size, measured as the natural logarithm of market value of
Size	equity(CRSP stock per share price * annual COMPUSTATA item CSHO);
LnAsset	The natural logarithm of one plus total assets(annual COMPUSTAT data item AT);
q	Tobin's q, defined as the ratio of market value of assets to book value of assets((Asset+abs(PRCC_F)*CSHO-CEQ)/AT from Compustat);
Leverage	Leverage, computed by total liabilities(annual COMPUSTAT data item LT)divided by total assets;
PPE	Gross property, plant and equipment(annual COMPUSTAT data item PPEGT) scaled by total assets;
AFE	Calculated as the IBES actual EPS minus the median of most recent analyst's forecast, and divided by stock price of fiscal year end;
AF	Analysts forecast for year ahead EPS/stock price at fiscal year end;
BTM	Book to market ratio;
EARN	Income before extraordinary items(annual COMPUSTAT data item IBC);
STDEARN	Standard deviation of EARN calculated over the last year;
$\Delta EARN$	Change in revenue of firm i at year t;
RET	Annual stock return calculated using CSRP monthly return data;
MTB	Market to book, defined as the market value of equity plus book value of liability and divided by the book value of total asset;
STDRET	Standard deviation of stock monthly return calculated over the fiscal year.
JMBE_change	Set to 1 if JMBE is larger than 0 and smaller than 0.005, and 0 otherwise. JMBE is calculated as the change in earnings divided by market value of equity
JMBE_analyst	Set to 1 if AFE is larger than 0 and smaller than 0.01, and 0 otherwise.
<i>CR(-1,+1)</i>	Cumulative stock returns of three-trading days from one trading day before and one trading day after the quarterly reports;
CR(+2,+61)	Cumulative stock returns of 60-trading days starting from the second day after the quarterly reports;
CR(+2,+161)	Cumulative stock returns of 120-trading days starting from the second day after the quarterly reports;

Appendix A:

Table 2 Correlation Matrix

Panel A : Quarterly analysis

-														TreatPost
	ABTONE	TONE	Size	EARN	BTM	STDEARN	∆ <i>EARN</i>	RET	STDRET	Loss	AFE	AF	q	
ABTONE	1	0.891***	-0.001	0.005	-0.016***	-0.014***	0.017***	0.003	-0.014***	0.021***	0.009***	0.003	0.039***	0.020***
TONE	0.921***	1	0.068***	0.050***	-0.083***	-0.107***	0.042***	-0.032***	-0.072***	-0.088***	0.013***	0.018***	0.100***	-0.001
Size	-0.001	0.059***	1	0.358***	-0.335***	-0.261***	0.089***	-0.003	-0.337***	-0.314***	-0.009***	0.005	0.342***	0.400***
EARN	0.000	0.010***	0.287***	1	-0.180***	-0.238***	0.154***	0.037***	-0.318***	-0.792***	0.084***	0.040***	0.250***	0.184***
BTM	0.000	-0.074***	-0.341***	-0.004	1	-0.183***	-0.074***	-0.082***	-0.027***	0.044***	-0.055***	-0.019***	-0.881***	-0.098***
STDEARN	-0.000	-0.053***	-0.259***	-0.463***	-0.111***	1	-0.053***	0.006*	0.515***	0.443***	-0.042***	-0.041***	0.282***	-0.061***
ΔEARN	0.001	0.005*	0.027***	-0.070***	-0.011***	0.007**	1	0.008***	-0.050***	-0.113***	0.037***	0.007**	0.071***	0.031***
RET	0.000	-0.055***	-0.020***	0.021***	-0.082***	0.006*	-0.010***	1	-0.140***	-0.010***	0.055***	0.005*	0.076***	-0.082***
STDRET	-0.000	-0.046***	-0.329***	-0.367***	0.082***	0.393***	-0.002	-0.083***	1	0.404***	-0.062***	-0.026***	0.077***	-0.237***
Loss	-0.000	-0.092***	-0.311***	-0.620***	0.120***	0.380***	-0.021***	-0.019***	0.388***	1	-0.070***	-0.036***	-0.044***	-0.115***
AFE	0.000	0.021***	-0.033***	0.058***	-0.044***	-0.039***	-0.003	0.046***	-0.059***	-0.063***	1	0.056***	0.049***	-0.038***
AF	0.000	0.022***	-0.017***	0.045***	-0.024***	-0.040***	0.006*	0.018***	-0.049***	-0.050***	0.074***	1	0.022***	-0.015***
q	0.034***	0.076***	0.172***	-0.136***	-0.444***	0.336***	0.015***	0.032***	0.171***	0.054***	0.019***	0.014***	1	0.115***
- TreatPost	0.005*	-0.022***	0.378***	0.124***	-0.112***	-0.108***	0.009***	-0.170***	-0.229***	-0.115***	-0.024***	-0.009***	-0.011***	1

Panel B : Annual analysis

														TreatPost
	ABTONE	TONE	Size	EARN	BTM	STDEARN	∆EARN	RET	STDRET	Loss	AFE	AF	q	
ABTONE	1	0.794***	0.001	0.010*	-0.024***	-0.034***	0.031***	-0.015***	-0.016***	-0.015***	-0.007	0.013**	0.038***	0.009*
TONE	0.806***	1	-0.021***	-0.001	-0.074***	0.001	0.039***	-0.023***	0.046***	-0.034***	-0.004	0.019***	0.111***	-0.054***
Size	-0.002	-0.027***	1	0.395***	-0.361***	-0.170***	0.134***	0.062***	-0.348***	-0.308***	0.021***	0.021***	0.371***	0.194***
EARN	-0.003	-0.037***	0.300***	1	-0.164***	-0.197***	0.218***	0.081***	-0.399***	-0.774***	0.089***	0.048***	0.234***	0.153***
BTM	0.001	-0.027***	-0.356***	0.010*	1	-0.191***	-0.132***	-0.177***	-0.014***	0.033***	-0.064***	-0.009*	-0.895***	-0.032***
STDEARN	0.000	0.024***	-0.203***	-0.446***	-0.139***	1	-0.105***	0.031***	0.418***	0.398***	-0.033***	-0.035***	0.296***	0.048***
ΔEARN	0.002	0.006	0.070***	-0.027***	-0.036***	-0.002	1	0.029***	-0.111***	-0.171***	0.059***	0.018***	0.127***	0.018***
RET	0.000	-0.032***	0.038***	0.009*	-0.170***	0.016***	-0.003	1	-0.148***	0.020***	0.069***	-0.005	0.181***	-0.099***

STDRET_	0.001	0.067***	-0.337***	-0.368***	0.061***	0.333***	-0.015***	-0.073***	1	0.390***	-0.078***	-0.022***	0.054***	-0.170***
Loss	0.003	-0.034***	-0.306***	-0.647***	0.095***	0.351***	-0.053***	0.014***	0.357***	1	-0.057***	-0.051***	-0.046***	-0.015***
AFE	-0.001	0.013**	-0.014***	0.047***	-0.060***	-0.022***	-0.002	0.054***	-0.066***	-0.068***	1	0.031***	0.060***	-0.038***
AF	0.002	0.015***	-0.005	0.045***	-0.015***	-0.022***	0.003	0.018***	-0.045***	-0.067***	0.034***	1	0.017***	-0.002
q	0.031***	0.097***	0.192***	-0.141***	-0.442***	0.394***	0.037***	0.093***	0.162***	0.043***	0.030***	0.019***	1	0.057***
TreatPost	0.001	-0.074***	0.167***	0.078***	-0.050***	-0.030***	0.006	-0.206***	-0.182***	-0.015***	-0.016***	-0.004	-0.029***	1

Note: ***p<0.01, **p<0.05, *p<0.1

This table presents the correlation matrix of the major variables used in the main analyses. Panel A shows the quarterly analysis, while Panel B shows the annual analysis. The Pearson correlation coefficients are reported in the upper right and the Spearman correlation coefficients are shown in the bottom left. All the variable definitions are reported in Appendix A.

	Fable 3: Expected tone model	
	(1)	(2)
	Quarterly-TONE	Annual-TONE
EARN	-0.098***	-0.025***
	(-8.45)	(-3.51)
RET	0.245***	0.252***
	(35.77)	(21.04)
Size	0.003***	0.000
	(8.21)	(0.09)
STDEARN	-0.065***	-0.010
	(-4.80)	(-1.04)
STDRET	-0.114***	-0.055***
	(-17.39)	(-4.67)
ΔEARN	-0.006	0.009
	(-0.42)	(0.36)
AFE	0.000***	0.000*
	(4.72)	(1.73)
AF	0.000***	0.000
	(3.19)	(1.59)
BTM	-0.019***	-0.007***
	(-20.43)	(-4.42)
Loss	-0.036***	-0.027***
	(-23.38)	(-8.82)
Year fixed effects	Y	Y
Industry fixed effects	Y	Y
N	108441	35157
\mathbb{R}^2	0.153	0.142
Adj. R ²	0.15	0.13

This table shows the results of regression (1), with quarterly results in column(1) and annual results in column(2). Tone is calculated as positive words minus negative words divided by total words in 10-Q report, we include firm characteristics in the regression and estimate the abnormal positive tone(ABTONE) as the residual. All the control variable definitions are shown in the appendix A. Year and industry fixed effects are included. *** indicates p<0.01.

	(1)	(2)
	Quarterly	Annually
	ABTONE	ABTONE
TreatPost	0.012***	0.004
	(3.01)	(1.02)
Size	0.009***	0.009***
	(6.65)	(6.09)
EARN	0.065***	-0.004
	(5.66)	(-0.58)
Leverage	-0.017***	-0.015***
	(-3.21)	(-2.88)
STDRET	0.048***	0.016
	(4.68)	(1.36)
BTM	0.010***	0.008***
	(6.83)	(4.52)
Firm FE	Y	Y
Year#quarter FE	Y	Y
Industry FE	Y	Y
Ν	108190	34302
\mathbb{R}^2	0.421	0.366
Adj. R ²	0.38	0.22

 Table 4: Effects of mandatory portfolio disclosure on firm tone management using LM dictionary

This table reports the results of the disclosure regulation on firm tone management behavior. Column(1) show the quarterly analysis while column(2) shows the annual analysis. The dependent variable is firm abnormal positive tone(*ABTONE*) calculated as the residual of regression (1) using LM dictionary. *Treat* is an indicator variable that equals one for treated firms(firms with above median mutual fund ownership) over the year before May 2004 by actively managed mutual funds that increased their portfolio disclosure frequency due to the SEC regulation change. *Post* is an indicator variable that equals one for fiscal quarters after the SEC regulation change in 2004 May. *Size* is the natural logarithm of the market value of equity. *EARN* is the net income before extraordinary items. *Leverage* is computed by total liabilities divided by total assets. *STDRET* is the standard deviation of stock monthly return calculated over the fiscal year. All the continuous variables are winsorized at 1% and 99% level. All the variable definitions are shown in the Appendix A. Standard errors are clustered at the firm level, and t-statistics are reported in parentheses. Firm, year-quarter, and industry fixed effects are included. *, **, *** indicate statistical significance at the 10%, 5% and 1%, respectively.

Figure 1 Firm tone management during the pre- and post-regulation periods



Figure 1.1 Quarterly analysis

This figure shows firms' tone management quarterly analysis for periods before and after the 2004 SEC regulation. The vertical lines represent the 90% confidence intervals for each parameter estimate using standard errors clustered at the firm level. Specifically, we report the estimated coefficients from the following regression:

$$\begin{split} ABTONE_{it} &= \beta_1 \ Treat_i \ * \ Post_{t-4} \ + \ \beta_2 \ Treat_i \ * \ Post_{t-3} \ + \ \beta_3 \ Treat_i \ * \ Post_{t-2} \ + \ \beta_4 \\ Treat_i \ * \ Post_{t-1} \ + \ \beta_5 \ Treat_i \ * \ Post_{t+1} \ + \ \beta_6 \ Treat_i \ * \ Post_{t+2} \ + \ \beta_7 \ Treat_i \ * \ Post_{t+3} \ + \ \beta_8 \\ Size_{it} \ + \beta_9 \ EARN_{it} \ + \ \beta_{10} \ Leverage_{it} \ + \ \beta_{11} \ PPE_{it} \ + \ \beta_{13} \ + \ \alpha_i \ + \ \alpha_{ind} \ + \ \varepsilon_{it} \end{split}$$

where $ABTONE_{it}$ refers to the firm abnormal positive tone, estimated as the residual from regression(1). All the variables' definitions are shown in Appendix A. $Pre_4 Pre_3 Pre_3$ and Pre_1 stands for quarters before the event, while $Post_1$ represents quarters after. All the other control variables are included. Firm and year#quarter fixed effects are included and errors are clustered at firm level.

	(1) Index funds	(2) Voluntarily disclosed funds	(3) Voluntarily disclosed funds(PSM)	(4) Non-MF Investors	(5) Time-series placebo test
TreatPost	0.009***	0.004**	0.007***	0.007***	0.019***
	(2.99)	(2.17)	(2.91)	(3.26)	(4.70)
PlaceboTreat	0.016***	-0.002	0.002**	0.003***	-0.009***
*Post	(2, 17)	(1.02)	(2,10)	(2, 12)	(2 , 0)
	(3.17)	(-1.03)	(2.10)	(3.12)	(-2.86)
Firm controls	Y	Y	Y	Y	Y
Firm fixed effects	Y	Y	Y	Y	Y
Industry fixed effects	Y	Y	Y	Y	Y
Year#quarter fixed effects	Y	Y	Y	Y	Y
$\beta_1 - \beta_2$	-0.007	0.005	0.005	0.004	0.028
P value of $\beta_1 - \beta_2$	0.1189	0.0001	0.0003	0.0012	0.0000

Table 5: Placebo tests of the impact of portfolio disclosure on firm earnings management

This table presents the impact of mandatory portfolio disclosure on firm earnings management of several placebo tests. Placebo groups' portfolio disclosure frequency has not been affected by the mandatory portfolio disclosure regulation. Four groups include (i)index mutual funds; (ii) mutual funds that voluntarily disclosed on a quarterly basis before the regulation; (iii) voluntarily quarterly reported mutual funds matched by the PSM; and (iv)non-mutual fund institutional investors (non-MF Investors). The results are presented in column(1) for index funds, column(2) for voluntarily disclosed funds, column(3) for voluntarily disclosed funds matched by PMS, column(4) for non-MF investors, and column(5) for time-series placebo test in 2006. All stock control variables, year, firm, and industry time trend fixed effects are included. Standard errors are adjusted for heteroskedasticity and clustered at the stock level. Coefficients marked with ***, ** and * are significant at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
	High fund	Low fund	High fund HHI	Low fund HHI
	turnover ratio	turnover ratio	-	
TreatPost	0.014***	0.008	0.003	0.021***
	(3.59)	(0.93)	(0.38)	(4.55)
Firm controls	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Industry time trend FE	Y	Y	Y	Y
Year#quarter FE	Y	Y	Y	Y
Ν	73757	33707	53813	53769
\mathbb{R}^2	0.458	0.507	0.465	0.490
Adj. R ²	0.40	0.40	0.39	0.42
Chow test	5.	09	1.2	21
P-value	0.0	062	0.2	990

Table 6 The impact of portfolio holdings on portfolio firms' tone management

This table presents evidence on the impact of different fund characteristics. We use funds' change in holdings to estimate the fund turnover ratio(column1) and portfolio HHI to estimate the fund portfolio concentration(column2). We divide funds into high and low sub-samples using median value of *Turnover ratio* and *HHI*. All the variables definitions are shown in the Variables Appendix. Standard errors are clustered at the firm level, and t-statistics are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	Panel A : Firm size	
	(1)	(2)
	Large	Small
TreatPost	-0.003	0.013**
	(-0.33)	(2.03)
Firm controls	Y	Y
Firm FE	Y	Y
Industry FE	Y	Y
Year#quarter FE	Y	Y
Ν	53800	53726
\mathbb{R}^2	0.432	0.460
Adj. \mathbb{R}^2	0.38	0.40
Chow test	9	.38
P-value	0.0	0001

	Panel B :Firm market to bool	ζ	
	(1)	(2)	
	High	Low	
TreatPost	0.008	0.014**	
	(1.33)	(2.47)	
Firm controls	Y	Y	
Firm FE	Y	Y	
Industry FE	Y	Y	
Year#quarter FE	Y	Y	
N	53843	53432	
\mathbb{R}^2	0.462	0.452	
Adj. R ²	0.41	0.39	
Chow test	1	53.27	
P-value	0	.0000	
	Panel C : Firm age		-
	(1)	(2)	
	High	Low	
TreatPost	0.013*	-0.011	-
	(1.76)	(-1.17)	
Firm controls	Y	Ŷ	
Firm FE	Y	Y	
Industry FE	Y	Y	
Year#quarter FE	Y	Y	
N	34930	26118	-
\mathbb{R}^2	0.455	0.562	
Adj. \mathbb{R}^2	0.40	0.50	
Chow test		3.03	
P-value	0	.0485	

	Panel D : Firm accrual	
	(1)	(2)
	High	Low
TreatPost	0.015***	0.005
	(2.92)	(0.96)
Firm controls	Y	Y
Firm FE	Y	Y
Industry FE	Y	Y
Year#quarter FE	Y	Y
N	53582	53430
\mathbb{R}^2	0.463	0.456
Adi. R^2	0.39	0.38
Chow test	24.	42
P-value	0.00	000
	Panel E:Firm volatility	
	(1)	(2)
	High STDEARN	Low STDEARN
TreatPost	-0.001	0.030***
	(-0.12)	(4.89)
Firm controls	Y	Y
Firm FE	Ÿ	Ŷ
Industry FE	Ŷ	Ŷ
Year#quarter FE	Ŷ	Ŷ
N	54227	53963
\mathbf{R}^2	0.427	0.420
Adi. R^2	0.38	0.37
Chow test	117	.51
P-value	0.00	000
	Panel E:Firm volatility	
	(3)	(4)
	High_STDRET	Low_STDRET
TreatPost	-0.005	0.028***
	(-0.79)	(4.91)
Firm controls	Y	Y
Firm FE	Y	Y
Industry FE	Y	Y
Year#quarter FE	Y	Y
N	53928	54012
\mathbb{R}^2	0.477	0.476
Adj. R ²	0.40	0.42
Chow test	15.	44
P-value	0.00	000

This table presents the results of heterogeneity effects of firm characteristics. Firm characteristics include firm size(Panel A), firm market to book(Panel B), firm age(Panel C), firm discretionary accruals(Panel D) and firm volatility(Panel E), The key independent variable ABTONE, is measured as the residual from annual cross-sectional regression(1). All the other control variable explanations are shown in the appendix. Firm, industry and year-quarter fixed effects are included in the regressions. The last two rows represent chow test of two groups. Standard errors are clustered at the firm level, and t-statistics are reported in parentheses. *** indicates a significance level at 1%.

	<u> </u>	<u> </u>
	(1)	(2)
	CEOownership	NITEMS
TreatPost	-0.001**	0.013***
	(-2.38)	(3.67)
Size	0.018***	0.009***
	(5.09)	(6.70)
EARN	0.120***	0.065***
	(3.56)	(5.65)
Leverage	-0.017	-0.017***
	(-1.42)	(-3.19)
STDRET	0.110***	0.048***
	(3.14)	(4.70)
BTM	0.003	0.010***
	(0.51)	(6.84)
Firm FE	Y	Y
Industry FE	Y	Y
Year#quarter FE	Y	Y
N	27938	108190
\mathbb{R}^2	0.419	0.421
Adj. R^2	0.36	0.38

Table 8 The impact of firm corporate governance level and firm operating complexity

This table presents the results of the impact of firm corporate governance level and firm operating complexity. Column(1) shows the result by interacting the Treatpost with the amount of CEO ownership. Column(2) represent results by interacting TreatPost with NITEMS(the total number of non-missing items of the firm). The key independent variable ABTONE, is measured as the residual from annual cross-sectional regression(1). All the other control variable explanations are shown in the appendix. Firm, industry and year-quarter fixed effects are included in the regressions. Standard errors are clustered at the firm level, and t-statistics are reported in parentheses. *** indicates a significance level at 1%.

Table9 Abnormal positive tone in strategic settings			
	(1)	(2)	
	JMBE_change	JMBE_analyst	
TreatPost	0.041***	0.053***	
	(3.24)	(3.05)	
Size	0.095***	-0.016***	
	(27.95)	(-3.53)	
EARN	0.518***	0.386***	
	(7.95)	(8.95)	
Leverage	-0.056***	-0.016	
	(-3.89)	(-0.83)	
STDRET	-0.114***	-0.161***	
	(-4.44)	(-3.93)	
BTM	-0.032***	-0.063***	
	(-7.35)	(-11.23)	
Firm FE	Y	Y	
Industry FE	Y	Y	
Year#quarter FE	Y	Y	
N	89025	38259	
\mathbb{R}^2	0.217	0.231	
Adj. R ²	0.15	0.10	

This table presents the results of firm using abnormal positive tone under mandatory portfolio regulation in strategic settings. The strategic setting includes just meeting ot beating earnings benchmarks(*JMBE*), we use two independent varibales *JMBE_change* and *JMBE_analyst*. *JMBE_change* is set to 1 if *JMBE* is larger than 0 and smaller than 0.005, and 0 otherwise. *JMBE_analyst* is set to 1 if *AFE* is larger than 0 and smaller than 0.01, and 0 otherwise. The key independent variable *ABTONE*, is measured as the residual from annual cross-selectional regression(1). All the other control variable explanations are shown in the appendix. Firm, industry and year-quarter fixed effects are included in the regressions. Standard errors are clustered at the firm level, and t-statistics are reported in parentheses. *** indicates a significance level at 1%.

Tab	le 10: Effects	of mandator	y portfolio di	sclosure on f	irm ABTON	E
	(1)	(2)	(3)	(4)	(5)	(6)
	ABTONE	ABTONE	ABTONE	ABTONE	ABTONE	ABTONE
$EARN_{t+1}$	0.004***					
	(4.18)					
$EARN_{t+2}$		0.003**				
		(2.47)				
$EARN_{t+3}$			0.003**			
15			(2.27)			
CR(-1,+1)				0.000		
				(0.77)		
CR(+2,+61)				(0111)	0.011***	
011(_, 01)					(2.84)	
CR(+2,+121)					()	0.019***
011(2, 121)						(3.44)
Size	-0.001*	-0.005***	-0.008***	-0.000	-0.039***	-0.069***
SILC	(-1, 78)	(-9.51)	(-14 19)	(-1.46)	(-25,30)	(-28.10)
FARN	0 170***	0.071***	0.053***	0.003	0 237***	0 263***
	(18.03)	(8 08)	(6.80)	(1.27)	(13.01)	(10.31)
Leverage	-0.000	0.002	0.007***	-0.000	0.002	-0.006
Levelage	(-0.22)	(0.94)	(3,35)	-0.000	(0.45)	(-0.86)
STORET	(-0.22)	(0.77)	0.010**	(-0.23)	0.137***	0 177***
SIDREI	(7.40)	-0.021	(2.40)	(1.78)	(11.77)	(10.58)
DTM	(-7.45)	(-3.19)	(-2.49)	(1.78)	(11.77)	(10.30)
DIW	(1951)	(15.78)	-0.009^{111}	-0.000	(10.025)	(10.53)
Eime EE	(-18.51) V	(-13.76) V	(-14.22)	(-1.40) V	(10.90) V	(10.34) V
	I V	I V	I V	I V	I V	I V
Industry FE	Y V	Y V	Y V	Y V	Y V	Y V
Y ear#quarter	Ŷ	Ŷ	Ŷ	Ŷ	Ŷ	Ŷ
FE N	100100	100100	100100	100100	100100	100100
N D2	108190	108190	108190	108190	108190	108190
R2	0.542	0.491	0.467	0.195	0.249	0.283
Adj. R2	0.51	0.45	0.43	0.13	0.19	0.23

This table presents the regression results of the firm earnings in future periods(one quarter $EARN_{t+1}$, two quarters $EARN_{t+2}$, and three quarters $EARN_{t+3}$ ahead), as well as the market immediate and delay reactions to firm abnormal positive tone. CR(-1,+1) is the three day cumulative stock returns around the quarterly reports date. CR(+2,+61) is the 60-day cumulative trading return starting from the second day, and CR(+2,+121) is the 120-day cumulative trading returns starting from the second day. All the other control variable explanations are shown in the appendix. Firm, industry and year-quarter fixed effects are included in the regressions. Standard errors are clustered at the firm level, and t-statistics are reported in parentheses. *** indicates a significance level at 1%.

Арренина D

Table B1	
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Description	Number of unique	Number of unique
2 company	funds	WFICN
	CRSP FUNDNO	
(1) U.S. domestic equity mutual	7,919	
funds with monthly return before	,	
May 10, 2004		
(a)Remove index funds	(498)	
(2) U.S. domestic actively managed equity mutual funds (1)-(a)	7,421	
(b)Remove funds with missing WFICN	(409)	
(3) U.S. domestic actively managed equity mutual funds (2)-(b)	7,012	2,590
(c)Remove funds with no disclosure		(175)
dates in Thomson Reuters S12 or CRSP before May 2004		
(4) U.S. domestic actively managed		2 415
equity mutual funds (3)-(c)		2,115
(d)Remove funds		(1,150)
that voluntarily disclosed on a		
quarterly basis in the year before		
May 10,2004(Voluntarily disclosed		
funds)		
(5) Funds that increased portfolio		1,265
disclosure frequency after the		
regulation in 2004(Affected funds)		
(4)-(d)		

Description	Number of firm-quarter	Number of unique
Description	observations	firms
(1) Compustat firms with positive total assets, non-missing firm monthly share outstanding, non-missing permno and observation in the Compustat/CRSP Merged Database four years before and after the regulation year May 10, 2004.	242,092	11,236
(a)remove		
Firms without mutual fund holding	(69,503)	(2,458)
(1)-(a)	172,499	8,778
(b) remove		
Firms missing Loughran-McDonald dictionaries	(59,949)	(1,437)
Firm-quarter observations with missing abnormal positive tone measure one quarter before and after the event fiscal quarter	(0)	
(3) Final sample for main tests(2)-(b)	112,550	7,341
(c)Event fiscal quarter observations	(3,810)	(0)
(4) Final sample(3)-(c)	108,740	7,341

Description	Number of unique	Number of unique
*	funds	WFICN
	CRSP FUNDNO	
(1) U.S. domestic equity mutual	7,919	
funds with monthly return before		
May 10, 2004		
(a)Remove index funds	(498)	
(2) U.S. domestic actively managed equity mutual funds (1)-(a)	7,421	
(b)Remove funds with missing	(409)	
WFICN		
(3) U.S. domestic actively managed	7,012	2,590
equity mutual funds (2)-(b)		
(c)Remove funds with no disclosure		(250)
dates in Thomson Reuters S12 or		
CRSP before May 2004		
(4) U.S. domestic actively managed		2,259
equity mutual funds (3)-(c)		
(d)Remove funds		(1,150)
that voluntarily disclosed on a		
quarterly basis in the year before		
May 10,2004(Voluntarily disclosed		
funds)		
(5) Funds that increased portfolio		1,109
disclosure frequency after the		
regulation in 2004(Affected funds)		
(4)-(d)		

Description	Number of firm-year	Number of unique
Description	observations	firms
(1) Compustat firms with positive total assets, non-missing firm monthly share outstanding, non-missing permno and observation in the Compustat/CRSP Merged Database four years before and after the regulation year May 10, 2004.	60,084	10,656
(a)remove		
Firms without mutual fund holding	(10,809)	(2,255)
(1)-(a)	49,275	8,401
(b) remove		
Firms missing Loughran-McDonald dictionaries	(9,572)	(1,471)
Firm-year observations with missing abnormal positive tone measure one quarter before and after the event fiscal year	(211)	(26)
(3) Final sample for main tests(2)-(b)	39,492	6,904
(c)Event fiscal year observations	(4,313)	(0)
(4) Final sample(3)-(c)	35,179	6,904

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