Information Response in Shareholder Activism

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Abstract

There has been a lack of consensus on shareholder activism's effects on disclosure. It may increase disclosure (Bourveau and Schoenfeld, 2017; McDonough and Schoenfeld, 2018) or reduce it (Chen and Jung, 2015). It may better inform investors (Ng et al., 2017; Khurana et al., 2017; Cheng et al., 2015) or mislead them (Khurana et al., 2017; Chen and Jung, 2015). This study attempts to address this issue from another perspective by investigating the aggregate effects of disclosure on the users' decision-making processes. I measure activism's relationship with information response and price efficiency through the earnings response coefficient and price delay. I find a waning investor response to management originated disclosure in the years after shareholder activism in the form of a lower ERC. This diminished response may be influenced by management, who express increased uncertainty through the annual report, and analysts, whose differences in opinion increase, in conjunction with activist presence at the firm. However, the increased uncertainty from insiders and close affiliates to the firm may be mitigated by an increased search and incorporation of information which originated outside the firm, exemplified by increased PIN for activism targets and decreased price delay of market-wide information for both activism targets and peers in the period after activism.

EFM Classification Codes: 200 - Market Based Accounting Research, 150 - Corporate Governance

Introduction

Activism itself is not a new topic to the financial markets. In the 1980s, "corporate raiders" as their opponents referred to them, such as Carl Icahn and Nelson Peltz popularized this strategy of active investing, involving letters to shareholders, shareholder proposals, proxy fights, and occasionally, hostile takeovers, in bids to enhance firm value. Supporters of activism viewed them as a type of market mechanism enacted to deal with the agency problems outlined in Jensen and Meckling (1976). Critics, on the other hand, expressed the belief that activists were filling their own coffers with gains won from the firms' acquiescence to their demands, often at the expense of all other stakeholders in the firm. The academic community was also conflicted, they observed mixed results from activism (Karpoff et al., 1996; Mulherin and Poulsen, 1998). The debate was renewed with the rise of hedge funds in the early 2000s. Whereas earlier activism events mostly involved individuals and institutional investors, now, the major players became hedge funds. With this new sample of firms, academic research appears to skew towards both positive short-term returns and long term performance (Bebchuk et al., 2015; Brav, Jiang, Partnoy, and Thomas, 2008; Klein and Zur, 2009) for activist targets. Brav et al. (2008) found that the market react positively to the announcement of activism with 7-8% abnormal returns. The positive returns to activism also persists over the long horizon with improvements in return on assets and operating profit margin. Klein and Zur (2009) find positive results for target firms that are campaigned against by both hedge funds and other activists. Targets experience CARs of 10.2% and 5.1%, respectively around 13D and 11.4% and 17.8%, respectively for the subsequent year.

Shareholder activism research branched out after these defining papers to explore why the results for activism differed from the last wave of findings and the specific channels activists used to achieve these returns. Several main topics emerged, including the role of institutional shareholders in activism events (Norli et al, 2014; Edmans et al., 2013; Coffee and Palia, 2015; Brav, Jiang, Li, 2018; Bradly et al., 2010; McCahery et al., 2016; Becht et al., 2008; Wong, 2016; Kedia et al., 2016; Gantchev and Jotikasthira, 2017), changes in operations (Gantchev et al., 2017; Brav, Jiang, Kim, 2015; Brav, Jiang, Ma, Tian, 2016; Grewal et al., 2016) or disclosure behavior (Chen and Jung, 2015; Ng et al., 2017; Khurana et al., 2017; Cheng et al., 2015; Bourveau and Schoenfeld, 2017; McDonough and Schoenfeld, 2018) after activist intervention, and a detailed analysis on particular types of activism such as proxy contests (Gow et al., 2014; Fos and Tsoutsoura, 2014; Brav, Jiang, Li, 2018) or shareholder proposals (Grewal et al., 2016; Liu and Wu, 2017).

While there is a general opinion is that activist activity often flares with other types of institutional shareholder maneuvers (Coffee and Palia, 2015; Wong, 2016; Gantchev and Jotikasthira, 2017, Brav, Jiang, Li, 2018) and activists advise on changes within the organization (Gantchev et al., 2017; Brav, Jiang, Kim, 2015; Brav, Jiang, Ma, Tian, 2016; Grewal et al., 2016), there is a lack of consensus about shareholder activists' effect on disclosure. It is not clear whether activists increase transparency through less accruals management (Ng et al., 2017; Khurana et al., 2017) and more conditional conservatism (Cheng et al., 2015) or encourage opportunistic behaviors such as more real earnings management (Khurana et al., 2017) and withholding of bad news (Chen and Jung, 2015). There is also some dispute on whether disclosure increases (McDonough and Schoenfeld, 2018) or decreases (Chen and Jung, 2015).

To gain insight into this issue, instead of focusing on the type and magnitude of disclosure, I test the market response to disclosure. Boyson and Pichler (2018) observe shareholder activism is better received by the market when it is countered by management than when it goes unopposed. When management decide to defend themselves against the shareholder activist, they may follow with more justification in the form of disclosure, suggesting a positive market reaction to disclosure. On the other hand, if investors anticipate the opportunistic behaviors (Khurana et al., 2017; Chen and Jung, 2015) or operational changes (Brav, Jiang, Kim, 2015; Brav, Jiang, Ma, Tian, 2016; Grewal et al., 2016) that have been documented, they may deduce additional risk and uncertainty for activist intervention, and subsequently react less to disclosure. I use two types of informational response. The earnings response coefficient (ERC) is the market response to largely firm-specific information which is issued by the manager, and price delay is the speed of incorporation of market-wide information into firm specific returns. An increasing ERC after shareholder intervention reinforces activism's disciplining effect on management since investors are willing to incorporate more accounting information into prices. On the other hand, decreasing price delay would signify investors are looking to other sources of information in the market to inform their decision-making.

Using a sample of 2,675 individuals and hedge fund initiated activist events between 2003 and 2017, I find a waning investor response to management originated disclosure in the years after shareholder activism in the form of a lower ERC. This diminished response may be influenced by management, who express increased uncertainty through the annual report, and analysts, whose differences in opinion increase, in conjunction with activist presence at the firm.

However, the increased uncertainty from insiders and close affiliates to the firm may be mitigated by an increased search and incorporation of information which originated outside the firm, exemplified by increased PIN at the activist target and decreased price delay of market-wide information for both activism targets and peers in the period after activism.

This paper makes several contributions to the literature. First, it adds to the growing literature on the less positive aspects of shareholder activism (Khurana et al., 2017; Chen and Jung, 2015; Cremers et al., 2015; Sunder et al., 2014; Wong and Zhao, 2017). Second, it sheds some light on the sources of information that may be contributing factors to positive evaluations by the market on activism (Bebchuk et al., 2015). Specifically, similar to Hirshleifer and Teoh (2003) who document there are limits to investors' attention, activists may exist as a type of mechanism alerting investors to revalue targets. Slightly different from Hirshleifer and Teoh (2003), I also find evidence that once deficiencies to the prior information gathering process are revealed, in this case, relying on managerial disclosure, the market is more likely to broaden their information search to other sources such as common market-wide information, forming their own private expectations, or spend more effort to analyze other sources of information accessible to the public. Finally, in the spirit of Piotroski and Roulstone (2004), Zuo (2016), Boubaker et al. (2014), I provide another example of where information acquisition from one source (firm-specific or market-wide, private or public) is contingent on information from other sources.

2. Literature Review and Hypotheses

2.1 Effects of Shareholder Activism

Research has documented a variety of consequences of activism, most of them positive. One type of positive response to activism appears to be efficiency gains. Targets refocus research and development on core competencies by selling off low-performing patents and retaining key talent while hiring personnel with a better fit (Brav, Jiang, Ma, and Tian, 2017). Targets also increase their total factor productivity and underperforming plants may be sold. In addition, labor productivity and IT investment increases (Brav, Jiang, and Kim, 2015). Activism may also enhance overall value. Grewal et al. (2016) report an improvement in target financial performance after passing sustainability proposals on subjects determined as material by the Sustainability Accounting Standards Board. Director turnover sensitivity to firm performance also increases after activism (Gow et al., 2014). Activism appears to address real shortcomings in directorial ability as those who are named in a proxy contest also lose directorships in other firms (Fos and Tsoutsoura, 2014).

Activist attention may lead to changes in general operations, strategy, and governance, but it may also elicit less optimal reactive behaviors from the target. Sunder et al. (2014) explore the hypothesis that since an activist represents the shareholders, the incentive-compatibility of a target manager may change after intervention, affecting the debt holders. They find that when proposals target governance issues which will improve shareholder and debt holder rights, interest spreads decrease while if the proposals are for corporate control, interest spreads increase. Liu and Wu (2017) further define Sunder et al.'s (2014) results showing that in the general universe of governance proposals, the firms which have higher ex-ante risk (more likely to default) experience increases in loan spreads after passage of the proposal. Wong

and Zhao (2017) document negative consequences for firms when targeted by a short-selling activist. These firms reduce their financing, investing, and total payout. Kedia, Wang, and Zhao (2016) conclude that some types of activist demands do not result in enhanced firm value, such as sale of assets, amendment of by-laws, and repurchases. Grewal et al. (2016) supplements the list with non-material sustainability proposals, which also diverts financial resources. Cremers et al. (2015) find that although activist targets experience increases in long-term value proxied by Tobin's Q, their improvements are lower than similar peers not targeted by activism.

Since there are successes and failures to campaigns (Klein and Zur, 2009; Brav, Jiang, Partnoy, Thomas, 2008) and successes and setbacks at the firms activists target, it does not appear shareholder activists have information to guarantee a road to victory. Prior studies have focused on the operational and governance effects of shareholder activism, but aside from a few papers on disclosure policy and information dissemination, it is not clear whether shareholder activists will help or hinder the processing of information at targets.

2.2 Shareholder Activism and Disclosure

The literature has found mixed results to how the information environment changes around activism. Ng et al. (2017) echo the opinion that activist proposals may improve governance at the firm in the form of lower discretionary accruals. But they also observe changes in accruals coinciding with more real earnings management. Chen and Jung (2015) postulate that in retaliation to activist intervention, firms limit disclosure which subsequently results in reduced transparency. Khurana et al. (2017) expand on Chen and Jung (2015) and conclude firms opportunistically withhold bad news while not changing disclosure patterns for good news. In

contrast, Cheng et al., (2015) challenge the theory of managerial opportunism and show that conditional conservatism, i.e. more timely reporting of bad news than good news, increases after activism. Furthermore, in contradiction to the aforementioned studies of less disclosure, Bourveau and Schoenfeld (2017) find that firms not targeted but in the same industry as activist targets are likely to increase disclosure when they become aware of the increased risk of activist engagement, perhaps to ward off any attempts.

As an event instigated by a large, but still relatively small in overall holding percentage shareholder, the outcomes of activism hinges on the response of the rest of the market as well as the activist and the target management. Whether activism makes disclosures more efficient or informative to the market provides some evidence as to whether the activist or management is more justified in the event. It also helps address the question of whether activism adds value, specifically, informational value. Boyson and Pichler (2018) discover that the more rounds of engagement there are between the activist and management, the more positive is the market reaction. McDonough and Schoenfeld (2018) find, complementarily, activists often include disclosure about the firm with their intervention, which is followed by manager's disclosure. Despite the positive governance changes and some evidence of increases to disclosures or perhaps disclosure is the sequential reaction, analysts appear to be confused by activism. Their coverage drops (Chen and Shohfi, 2018) and refrain from issuing strong recommendations after activism (Flugum and Howe, 2017). Aside from the aforementioned studies though, to the best of my knowledge, third-party responses to activism have been sparsely researched and would benefit from clarification as to how they respond, and whether different types of disclosure elicit differing responses.

I focus primarily on two types of response designed to investigate investor response to the most common classifications of information. The first measure is the earnings response coefficient, which is the price response to firm-specific earnings information prepared by management. The second measure is the speed of reflection of publicly available information about general market conditions in the stock price.

2.3 Earnings Response Coefficient (ERC)

One of the earliest uses of financial reporting was a signal to investors about expected future cash flows (Patell, 1979). Indeed, returns appear to move in the same direction as quarterly earnings immediately after announcement (Foster, 1977). The earnings response coefficient (Collins and Kothari, 1989) is used to measure the sensitivity of short term unexpected returns to unexpected earnings surprises. Burgstahler and Chuk (2017) decompose the earnings response coefficient into two parts. One part that represents the precision of the current earnings information, and one part that reflects all past information. The ERC is a function of the relative weighting. The response coefficient is affected by the integrity of financial report numbers through governance (Teoh and Wong, 1993; Anderson et al., 2003; Wilson, 2008), determinants of the expected earnings model (Imhoff Jr. and Lobo, 1992), and the riskiness that the expected future cash flows will be actualized (Collins and Kothari, 1989; Dhaliwal and Reynolds, 1994).

Activism could change the ERC in several ways. If the incidence of shareholder activism reveals a problem at the firm, then the change in ERC or lack thereof would be dependent on how the problem would affect the information relevance of accounting earnings and whether it may be

resolved with the activist's intervention. Similar to Wilson (2008), who explores the effect of misstatements on the ERC, activism may signify deficiencies in the financial reporting process (Ng et al., 2017; Cheng et al., 2015). Wilson (2008) finds that ERC is temporarily depressed, presumably by investors' loss of confidence in the accounting numbers after misstatements. If the market perceives activists as monitors and the entry of an activist shareholder as related to firm deficiencies which have a bearing on earnings, for example, as a result of governance issues (Gow et al., 2014; Fos and Tsoutsoura, 2014; Ng et al., 2017; Cheng et al., 2015), then ERC may decrease. If the presence of shareholder activism simply represents a differing opinion on how the firm should be managed, it could be a manifestation of uncertainty about the firm, as it shows a lack of consensus on what would be the best trajectory of operations for the firm, particularly, Chen and Shohfi (2018) find declining coverage leading up to activism. Uncertainty could also result in a lower ERC because of the increased risk of projected earnings.

Most of the literature outlining activists' demands for changes (Brav, Jiang, Partnoy, Thomas, 2008; Liu and Wu, 2017; Grewal et al., 2016) suggest shareholder activism uncovers past inefficiencies in firm operations. However, whether the ERC changes for periods during activist intervention depends on the market's perception of activists' success at assuming the advisory role, specifically, orchestrating changes in the information relevance of managerial disclosure. There have been findings on activists' ability to realize value enhancements at the firm (Boyson, Gantchev, Shivdasani, 2017; Brav, Jiang, Kim, 2015; Brav, Jiang, Ma, Tian, 2016) and others which refute the claim (Cremers et al., 2015) or only find enhancements in subsamples where activists' information is more aligned with firm environment (Kedia, Wang, Zhao, 2016; Grewal et al., 2016).

The studies mentioned above focus on operational changes, this paper explores whether these changes are accompanied with changes in the information environment, or if activists may have an effect on information dissemination and response independent of the stated objectives and type of action taken. Boyson and Pichler (2018) suggest investors consider more rounds of engagement between the shareholder activist and the management, likely followed with more disclosure of news and facts by both parties, as positive compared to unopposed activism. McDonough and Schoenfeld (2018) also find that activists often accompany intervention with more disclosure, helping them garner support, and management follows with more disclosure of their own. Activists and management both increase disclosure in order to influence the outcome of shareholder activism. It is not clear though, how the remaining party, the rest of the shareholders and the market, perceive the objectives of the activist and management. They may consider opportunism (Khurana et al., 2017; Ng et al., 2017) the strongest motivating force and discount information from management, lowering the ERC. On the other hand, the market may believe information from one party is more credible than the other, if activism has a disciplining effect on management, then the ERC may increase. As such, shareholder activism's effect on ERC is dependent on whether the activist event is an indicator to the market of information quality at the firm, and whether investors believe subsequent intervention will change it.

H1: There is no difference in the earnings response coefficient for shareholder activist targets for intervention and non-intervention time periods.

2.4 Price Delay

While the ERC focuses on how the market reacts to information which originates from the firm, Hou and Moskowitz's (2005) price delay measures the speed at which market-wide information is absorbed into prices. Both information content and speed of reflection matter for information. Hou and Moskowitz (2005) find that price delay is negatively correlated with liquidity and investor attention. Better information quality also reduces delay (Dong et al., 2014; Callen et al., 2011).

If activists are able to pressure management to provide information with higher precision (Ng et al., 2017; Khurana et al., 2017) and more timely information (Cheng et al., 2015) or reduce information asymmetry themselves through disclosure (McDonough and Schoenfeld, 2018), then price delay may decrease. Even if shareholder activists are not in possession of a key piece of private information, their use of "voice", to bring something akin to information to the market, may increase price efficiency. Shareholder activism may draw some investors' attention encouraging them to search for information (Hirshleifer and Teoh, 2003) and subsequently trade on it, activists may also only have one piece of information in a "mosaic" which is inconsequential unless they can also find other players which can make their information more useful (Cheynel and Levine, 2013). In contrast, if shareholder activists are in possession of superior information or encourage arrival of private information from other sources, then informed trading increases (Piotroski and Roulstone, 2004), i.e. the proportion of private information used in trading surpasses the proportion of public information, thereby increasing price delay.

Further, shareholder activists are often fighting for control rights (Gow et al., 2014; Boyson, Gantchev, Shivdasani, 2017) with the cash flow rights, through shareholding, already within grasp. If activists are successful in advocating for their objectives, the re-merging of cash flow and control rights will increase transparency in a formerly opaque information environment, expanding the breadth of information available for use by investors (Boubaker et al., 2014). This may either increase price delay if investors are substituting the only source of information that was readily available before – market-wide information, with other better sources. On the other hand, if market-wide information is used for investing decisions in conjunction with other firm-specific information, then price delay may decrease. Gordon and Wu (2018) observe a positive relationship between the probability of informed trading and price delay. If the addition of an activist to the shareholder base reduces the proportion of liquidity traders trading on stocks of the target, then an increased price delay would follow according to Gordon and Wu (2018) since more of the trading will be based on specific instead of common information. In summary, since price is an aggregate measure of public and private information from diverse participants, the direction of price delay after shareholder activism is an empirical question.

H2: There is no difference in price delay for shareholder activist targets for intervention and non-intervention time periods

3. Methodology

To test the earnings response coefficient for activism and non-activism quarters, I regress the returns around the earnings announcement windows on unexpected earnings. Following Wilson (2008) for the ERC model,

$$r = \alpha + \beta_1 UE + \beta_2 ACTIVE + \beta_3 UE * ACTIVE + \beta_4 NONLINEAR + Controls + \varepsilon \quad (1)$$

$$r = \alpha + \beta_1 UE + \beta_2 ACTIVE + \beta_3 POST + \beta_4 ACTIVE \times POST + \beta_5 UE \times ACTIVE + \beta_6 UE \times POST + \beta_7 UE \times ACTIVE \times POST + \beta_8 NONLINEAR + Controls + \varepsilon \quad (2)$$

(2) is the difference in differences specification. The return is calculated as the firm-specific excess return over the market from 2 days before the earnings announcement to 1 day after the earnings announcement. Prior research has shown that most earnings information is incorporated in to the price by day +1 after the earnings announcement (Foster, 1977). Unexpected earnings is measured as the amount of actual reported earnings over the median of all analyst forecasts issued from 60 days before the earnings announcement until announcement date, scaled by price at quarter end. *ACTIVE* is a dummy variable which equals one if the firm-quarter is a quarter in which the activist intervention is ongoing and zero otherwise. Activist entrance is measured as the filing of a SEC 13D and activist exit is measured as the filing of a SEC 13D amendment where the activist's (or last activist, if there is a group) shareholding drops below 5%. In the difference in differences specification, *POST* inherits the definition of *ACTIVE* in the simple regression and *ACTIVE*=1 for shareholder activism targets and *ACTIVE*=0 for the matched sample. β_3 and β_7 are the coefficients of interest, which represents the change in the ERC during the period of shareholder activism. *NONLINEAR* is a control added to mitigate the observation that the effect of the ERC diminishes for more extreme values of unexpected earnings (Burgstahler and Chuk, 2017). I add additional controls for the predictability of a firm's earnings series, size, market to book, and CAPM beta of the firm, and indicators for loss and 4th quarters. I also include the interaction between all controls and unexpected earnings. A more predictable earnings series is associated with a higher ERC (Lipe, 1990). I use the average of the past two

year's unexpected earnings over analyst forecasts as predictability of earnings. Market to book is a proxy for growth, which has been shown to be positively related to ERC (Collins and Kothari, 1989). Beta is negatively related to ERC (Collins and Kothari, 1989). Loss quarters are shown to elicit less of a reaction from the market (Hayn, 1995) and similarly for the 4th quarter, which often coincides with information from fiscal year end and the issuance of annual reports (Mendenhall and Nichols 1988; Salamon and Stober, 1994), therefore, I expect the ERC to be negatively related to both variables.

For activism's relationship with price delay, I use Hou and Moskowitz's (2005) measure. The firm-specific weekly return is first regressed on weekly market returns from the past four weeks.

$$r_t = \alpha + \beta_5 R_{m,t} + \sum_{i=1}^{4} \beta_i * R_{m,t-i} + \varepsilon_t \quad (3)$$

Subsequently, the regression is estimated for each firm-year, and the delay proxy is calculated as

$$D = 1 - \frac{R^2_{\beta_{1,2,3,4}=0}}{R^2} \quad (4)$$

In other words, if the lagged beta coefficients explain variation in the firm-specific return of the current week, then the firm's prices are "late" in reflecting market-wide information from earlier periods. Therefore, the greater the R^2 in the unrestricted equation compared to the R^2 when the only explanatory variable for current firm-specific returns is current market returns, the smaller the fraction and greater the price delay.

The delay measure for every firm-year is regressed on an indicator on whether it is an activist firm-year,

$$D = \alpha + \beta_1 ACTIVE + Firm\ Specific\ Controls + \varepsilon \quad (5)$$

$$D = \alpha + \beta_1 ACTIVE + \beta_2 POST + \beta_3 ACTIVE \times POST + Firm\ Specific\ Controls + \varepsilon \quad (6)$$

Following Hou and Moskowitz (2005), I add controls for size and market-to-book, as larger firms and firms with higher market valuation have higher market participation, resulting in more frequent trading in their stocks, which may reduce price delay. I also control for share turnover (Hou and Moskowitz, 2005; Callen et al., 2013), a proxy for liquidity, reflecting if a stock is bought and held more often in a time period, then information may be incorporated into the stock price at a faster rate. Finally, I control for institutional ownership (Hou and Moskowitz, 2005; Callen et al., 2013) as shareholder activists are a type of blockholder. Their entry as an investor could possibly affect the percentage ownership by institutions, which as an attention measure, may result in lower price delay.

3.1 Data

SEC 13D filings are extracted using the 13D database from Audit Analytics. I then hand collect firms and individuals who engage in shareholder activism from the NIRI list of top 200 activist hedge funds[1], 13D monitor[2], and internet searches. Some shareholder activists do not cross the 5% threshold when engaging in activism, such as proxy contests and shareholder proposals relating to Section 14 of the Securities and Exchange Act of 1934, and thus, these events will not

[1] https://www.niri.org/resources/resource-libraries/corporate-governance-resource-library/shareholder-activism
[2] https://www.13dmonitor.com/

be recorded in the 13D database. In total, I find 355 activists who can be matched to 13D filings in the database from 2003 to 2017, for a total of 2,675 activist events. Analyst and earnings announcement variables are collected from I/B/E/S, institutional ownership is collected from the Thomson Reuters 13F database, data on the number of words and uncertainty words in the 10-K report are from a publicly available dataset provided by the authors (Loughran and McDonald, 2011)[3], PIN is extracted from Brown and Hillegeist's (2007) public database[4], firm-quarter and firm-year information are from Compustat, and returns I gather from CRSP.

Table 1 Panel A shows the distribution of activism events by their start year, in accordance with prior research (Boyson, Gantchev, Shivdasani, 2017; Chen and Jung, 2016; Bourveau and Schoenfeld, 2017; Klein and Zur, 2009) the frequency of activism appears to follow economic cycles where activism events reach a peak around 2003 and 2007 and decreases following market crashes. Interest in initiating new activism campaigns appears to be waning in the most recent years despite favorable stock market performance. Panel B also lists shareholder activism events by industry, with healthcare, financial, business services, and manufacturing being popular industries.

[Insert Table 1]

3.2 Difference in Differences Specification

There does not exist a natural control group for firms which are targeted by shareholder activists, as the decision to initiate activism is endogenously determined. To explore whether the

[3] https://sraf.nd.edu/textual-analysis/resources/
[4] http://scholar.rhsmith.umd.edu/sbrown/pin-data?destination=node/998

information environment is affected by the shareholder activists' presence in the industry (Bourveau and Schoenfeld, 2017), contagion in firms with similar characteristics (Gantchev et al., 2017), or a consequence of actions taken by the activist at the firm, I use propensity score matching (Rosenbaum and Rubin, 1983). I match within a radius using observable factors which have been shown to influence the probability that a firm is picked by an activist as the intervention target. Following Brav et al. (2008), I estimate the probability of targeting based on *t*-1 values of firm size, return on assets, debt-to-equity ratio, sales growth, dividend yield, Tobin's Q, analyst following, institutional ownership, and Herfindahl index (Khurana et al., 2017; Brav et al, 2008). Firms are matched on year, and restricted to a pre-determined caliper distance, which retains only firms with close matches. Size, Herfindahl index, Tobin's Q, analyst following, and institutional ownership are consequential factors which determine whether a firm is likely to encounter shareholder intervention. Table 2 outlines the parameters to calculate the propensity score for each firm. In total, I find matches for 546 firms which have experienced shareholder activism.

[Insert Table 2]

For the difference in differences test, control firms are matched to their activist counterparts on the start year of the shareholder activism events, identified by the filing of a SEC13D with shareholding equal to or above 5% of the total outstanding shares of the firm. All years from the start year until the exit of the shareholder activist, identified by the filing of a SEC13D amendment with shareholding below 5%, is coded as *POST* = 1. Activism firms are coded as *ACTIVE* = 1, and for the matched control firms *ACTIVE* = 0. The main effect is the coefficient

on *ACTIVE×POST*, representing the incremental change after shareholder activism for targets, compared to the matched non-targets.

4. Results

4.1 Descriptive Statistics

Table 3 gives the descriptive statistics for activism firms during the period when shareholder activists are present at the firm compared to when they are not, including both pre- and post-time periods as well as tests of difference in means. Firms with ongoing shareholder activist presence have lower price delay, higher institutional ownership (Wong, 2016; Coffee and Palia, 2015; Brav, Jiang, Li, 2018; Kedia, Starks, Wang, 2016), lower earnings volatility but higher returns volatility, higher PIN, experience more losses, and have more business and geographic segments (Brav, Jiang, Ma, Tian, 2016; Brav, Jiang, Kim, 2015). Some of these statistics corroborate with findings in the prior literature, however, activism firms only consist a small portion of the sample, therefore, descriptive statistics are also provided in Table 4 for activism events and their matched sample. Activist targets are smaller in size, have more losses, a more sensitive beta, higher PIN, less predictable earnings, higher turnover and institutional ownership.

[Insert Table 3]

[Insert Table 4]

4.2 ERC and Activism

Column 1 of Table 5 presents results for the multivariate regression of cumulative abnormal returns on unexpected earnings with controls. Unexpected earnings has a significantly positive relationship with abnormal returns, as expected. The ERC, on the other hand is significantly negative, representing that the market responds less to earnings announcement information during times of activist intervention. The decrease in ERC is also economically significant (coefficient = -1.52352, t-statistic = -2.48) as it lowers the ERC without the presence of activism (coefficient = 2.70518, t-statistic = 3.86) by approximately 50%.

The difference in differences specification in Column 2 of Table 5 provides more confidence in the observed results from the simple multivariate regression. Again, the ERC on the variable of interest, the incremental change for activism firms post activism *UE*×*ACTIVE*×*POST*, is negative and significant (coefficient = -3.03963, t-statistic = -2.1), suggesting the decrease in ERC coincides with activist intervention. On the other hand, the interaction between *UE* and *POST* is significantly positive. There appears to be a disciplining effect of activism for similar firms (Bourveau and Schoenfeld, 2017; Gantchev et al., 2017), who seek to improve their information environment in order to deter intervention. Additionally, Lennox and Park (2006) find that managers provide more disclosure when they expect ERC to be greater, and thus, managers' expectation of investors' need for information at activist peers may be a motivator for their increased disclosure (Bourveau and Schoenfeld, 2017). Except the market beta, all significant control interactions with unexpected earnings are in the expected direction. *Predictability* measured as the average variation in unexpected earnings is significantly negative, meaning as predictability increases, ERC also increases since every unit of earnings surprise represents a comparatively larger deviation from prediction, and thus, evokes a larger market

reaction. Loss and 4th quarters have a significantly negative relationship with ERC, while size and market-to-book have a significantly positive relationship.

[Insert Table 5]

4.3 Price Delay and Activism

In descriptive statistics, price delay appears to be lower in the activism sample, in addition, institutional ownership is also higher for activist targets. Hou and Moskowitz (2005) find negative correlation between institutional ownership and price delay. In this section, I test this relationship more rigorously. Table 6 presents results for regressions of price delay and shareholder activism firm-years using the full sample and a propensity score matched sample. In the full sample the coefficient on *ACTIVE* is negative and highly significant (coefficient = -0.02825, t-statistic = -3.35), suggesting there is an incremental relationship between activist intervention and lower price delay in addition to the effect of institutional ownership, which may increase either mechanically through activist holdings or through activists attracting other institutions (Corum and Levit, 2017; Brav, Dasgupta, Mathews, 2016; Wong, 2016; Coffee and Palia, 2015; Brav, Jiang, Li, 2018; Kedia, Starks, Wang, 2016).

The difference in differences specification shows that it appears both activist targets and their peers experience lower price delay in the intervention period (coefficient on *POST* = -0.0625, t-statistic = -2.8), although it does not appear there is an incremental difference for the actual targets compared to their peers. The results provide some support for the argument that shareholder activism directs investor attention to the targets and firms most similar to them, in

the form of using more publicly available information to price securities than before it was known that the targets have become part of the activists' portfolio. For the control variables, size and institutional ownership coefficients are negative and significant in all models, conforming to expectations that they are signs of higher investor participation, and thus, correlated with a lower price delay. Prior year turnover is also negative in all models, but has significance only in the OLS regression. Since institutional ownership does not subsume the correlation between activism and price delay, shareholder activism has additional explanatory power for price delay over what may be attributed to blockholder characteristics. In conjunction with the findings from the ERC, it appears that the incidence of shareholder activism shifts information searching for price-setting from management estimates towards market-wide information.

[Insert Table 6]

4.4 Other Sources of Information

The prior results show that in the period after an activist stake is made public, the market appears to use less information which originate from management, reflected in the ERC, and instead, increase their application of market-wide information, but there does not appear to be an incremental effect of reduced price delay at the target compared to peers. However, Bebchuk et al. (2015) observe an increase in operational profitability after activism, if investors are rational, then the increase must originate from some source of information. Aside from public disclosure by insiders, and information common to all market participants, prices may integrate trading from informed participants. I investigate if this is the case through evaluating shareholder activism's effect on the probability of informed trading (PIN). The PIN is calculated from

analyzing daily buy and sell orders of a stock where it is assumed the order imbalance would be different when some traders submitted their orders on information compared to no information or directionally different information (Easley et al., 2002). I use Brown and Hillegeist's (2007) PIN dataset which adjust Easley et al.'s (2002) model to allow correlation between uninformed buy and sell orders. As a result, data availability is only from 2003-2010 as opposed to 2003 – 2017 for all remaining tests. Since I am using quarterly data, I control for loss and fourth quarters. I control for market-to-book and size, as shareholder activism may affect market valuations and pare down the size of an organization (Brav, Jiang, Ma, Tian, 2016; Brav, Jiang, Kim, 2015), resulting in difference in PIN (Easley et al., 2002). I control for analysts' following and dispersion as activism may result in more uncertainty for analysts (Flugum and Howe, 2017) and they may be reluctant to issue opinions, resulting in an even more opaque information environment, deterring informed trading (Piotroski and Roulstone, 2004). I also control for institutions, who are a large contributor to informed trading (Jiambalvo et al., 2002) and earnings volatility (Zhang, 2001).

[Insert Table 7]

In both the difference in differences and multivariate regression of PIN on the incidence of activism (Table 7), I find that shareholder activism is associated with significantly greater PIN (difference in differences coefficient = 0.01693, t-statistic = 2.98). The greater PIN may be the reason behind the insignificant difference in price delay between targets and peers even though only the activism targets are subject to actual intervention. Researchers have documented that investors may either substitute private information for public information (Boubaker et al., 2014)

once it is available and evaluated to be more precise, or rely on public and private information to price securities, which may delay the incorporation of publicly available information into prices (Piotroski and Roulstone, 2004; Gordon and Wu, 2018). Therefore, after the initiation of shareholder activism events, investors distance themselves from managerial disclosure, evidenced by the ERC, and search for information elsewhere. Market-wide public information is the most accessible and used by investors at targets as well as peers, supporting the hypothesis that shareholder activism draws attention to firms and their corresponding industries (Gantchev et al., 2017; Bourveau and Schoenfeld, 2017). In addition, shareholder activism also has a differential effect. Particularly, at the targets, investors shift away from earnings information to either newly obtained information or previously retained private information that has now increased in value or precision (Cheynel and Levine, 2013) after the shareholder activism event.

4.5 Supplemental Analyses: Words in 10-K and Analyst Dispersion

The results from the ERC test proposes that when a shareholder activist's stake in the target is made public, investors use earnings announcement information less to set their estimates for stock price. I want to investigate this phenomenon further and explore if it is driven by uncertainty originating from the manager, market skepticism, or investor-derived distrust of management. Specifically, I regress the number of words and number of uncertainty words (Loughran and McDonald, 2011) in the 10-K on activism firm-years. I control for size, market-to-book as they are related to the probability of targeting (Brav et al., 2008) and also may affect the complexity of the annual report (Loughran and McDonald, 2011). I control for earnings and return volatility as shareholder activism may result in abnormal variance in trading activity (Gantchev et al., 2017) or operational changes which may then influence management's report of

such events (Li, 2008). I also control for number of business and geographic segments (Li, 2008), as activism has been shown to be associated with reorganization of product lines (Brav, Jiang, Ma, Tian, 2016; Brav, Jiang, Kim, 2015). In addition, I control for age of the firm and number of special items as correlates to the number of words in the report (Guay et al., 2016; Li, 2008). Details on how the variables are calculated are included in the appendix. In Table 7, the coefficient on activism firm-year is positive and significant for both the total number of words (coefficient = 3894.6, t-statistic = 5.61) and number of uncertainty words (coefficient = 41.0, t-statistic = 6.27). It appears managers issue longer reports after shareholder activism, which also reflect their concern about how activists will affect operations and governance at the firm in the form of more uncertainty words. The lower ERC observed may be a result of managers' uncertainty eliciting similar unpredictability for the investors, and their unwillingness to trade on information or lack of consequential information from earnings announcements.

[Insert Table 8]

To complement response from all investors, I also look at the group of investors assumed to be more informed. I regress analyst dispersion on activism firm-quarters. I control for size and market-to-book ratio (Lang and Lundholm, 1996), also loss and 4th quarter since the data for forecast dispersion is collected on a quarterly basis. If shareholder activism directs investor attention toward stocks, it may induce momentum, which is correlated with analyst dispersion (Verardo, 2009), therefore, I add momentum as a control. I control for sales turnover, change in EPS and its variance as shareholder activism may result in operational (Brav, Jiang, Ma, Tian, 2016; Brav, Jiang, Kim, 2015; Grewal et al., 2016; Wong and Zhao, 2017) and fundamental

value (Cremers et al., 2015) changes at the firm affecting its profitability. I also control for price, the market beta, and number of analysts following Liu and Natarajan (2012) since shareholder activism as a type of market phenomena may have effects on other market measures for the target. Detailed explanations on the variables are included in the appendix. Table 8 presents regression of analyst dispersion on shareholder activism. Corroborating Flugum and Howe's (2017) findings, activism results in higher dispersion for analysts (coefficient = 0.0867, t-statistic = 2.58). However, it is debatable whether the high dispersion is reflecting firm-specific manager relayed information (Baginski et al., 1993) or market wide news (Chan and Hameed, 2006), private information (Barry and Jennings, 1992) or uncertainty (Barron and Stuerke, 1998). One possible explanation, though, is the change in dispersion (Barron et al., 2009) correlating with shareholder activism is another manifestation of investors internalizing the uncertainty of managers presented through the 10-K words and ERC results.

[Insert Table 9]

4.6 Robustness Tests

In the shareholder activist target and matched sample, some firms have institutional ownership over 100% of the shareholding as calculated when aggregating the fund managers' shareholding with the recorded total shares outstanding from the Thomson Reuters 13F database. Institutions owning more than 100% of the shares may represent a large amount of short-selling or it may be a data error. As such, I complete the analyses restricting regressions to firms with institutional shareholding less or equal to 100%. Table 9 shows there are minimal differences between the two samples and all coefficients of interest, *ACTIVE, POST, ACTIVE×POST* are still significant.

[Insert Table 10]

Radius matching is dependent on the caliper selected (for the main tests, I used 0.0008), which determines how close the matched sample are to the activist targets when compared on observable factors. I conduct sensitivity analysis on the matching procedure using calipers of 0.0005 and 0.001. In untabulated results, for both the ERC and price delay tests the sign of the coefficients of interest remain the same and none of variables move significance levels except in one specification for price delay *ACTIVE* goes from significance at the 5% level to significance at the 10% level and *POST* goes from significance at the 1% level to significance at the 5% level. However, both still have significance.

5. Conclusion

Much of the shareholder activism literature has focused on the operational changes to activism (Gantchev et al., 2017; Brav, Jiang, Kim, 2015; Brav, Jiang, Ma, Tian, 2016; Grewal et al., 2016) or disclosure behavior at the firm (Chen and Jung, 2015; Ng et al., 2017; Khurana et al., 2017; Cheng et al., 2015; Bourveau and Schoenfeld, 2017; McDonough and Schoenfeld, 2018). The following question would be whether the information environment changes after activist intervention, and if it changes, whether it can be attributed to incumbent management, the activist, or the behavior of the rest of the investors. I investigate how the market responds with their subsequent information gathering needs through measuring the earnings response coefficient, price delay in reflecting market-wide information, and the Probability of Informed Trading at activism firms compared to other public firms as well as a matched sample. The

results suggest the efficiency of traders in incorporating management's disclosure into prices decreases, perhaps echoing uncertainty from trusted advisors including management themselves and analysts. On the other hand, the market compensates by incorporating more informed, firm-specific information and common market-wide information to form valuations, measured as increasing PIN for activist targets and decreasing price delay for targets and peers. I interpret the findings as investors discounting manager-originating information after activism, and instead, relying on other sources, such as publicly available market information, skilled analyses of common information, and possibly private information in their effort to form prices.

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Table 1: Descriptive Statistics for Activism Targets

Sample contains 2,675 shareholder activism events initiated by 355 activists.

Panel A: Activism Events by Year

Start Year	*Number of Events*
2003	303
2004	180
2005	184
2006	250
2007	290
2008	205
2009	92
2010	144
2011	148
2012	128
2013	143
2014	138
2015	148
2016	105
2017	131

Panel B: Activism Events by Industry

Industry	*Number of Events*
Business Services	387
Consumer Durables	188
Consumer Nondurables	53
Financial	263
Healthcare	370
Manufacturing	223
Natural Resources	117
Other	456
Other Services	94
Technology	200
Telecommunications	92
Utilities	41
Wholesale and Retail	192

Table 2: Probability of Being an Activist Firm-Year

Determinants of shareholder activism are taken from Brav et al. (2008). Firm-years are between 2003-2017. A dummy variable indicator is added for each year. All variables are measured at $t - 1$ while activism is measured at time *t*. DIV YIELD is the dividend yield, SALES GROW is sales growth from the prior year, ROA is the return on assets, SIZE is measured as the log of the market value. DE is the debt to equity ratio, HERFINDAHL is the Herfindahl Index for the firm, TOBINQ is Tobin's Q for the firm, NUM ANALYS is the number of analysts issuing annual forecasts, and INST OWN is percentage of ownership by institutions at the firm. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

Variable	Estimate
INTERCEPT	2.5306***
DIV YIELD	0.003
SALES GROW	0.0056
ROA	0.1387
SIZE	0.2015***
DE	0.000117
HERFINDAHL	-0.6998***
TOBINQ	0.1011***
NUM ANALYS	0.0277***
INST OWN	-1.1783***
Firm-Year Dummy	Yes
Firm-Years	37,404

Table 3: Descriptive Statistics for Activists and Non-Activists

Panel A: Firm-Years

Firm-years are between 2003-2017, including 4,769 observations for activists and 161,643 observations for non-activists. A firm-year is considered activist if the shareholder activist was present at the firm with more than 5% of total shareholding as recognized by the SEC13D from 90 days after beginning of the fiscal year to 90 days before end of the fiscal year. Non-activist firm-years include observations before shareholder activism and observations after shareholder activism as measured by when the SEC13D amendment drops to below 5% shareholding by the activist. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

N = 166,412		Mean	Median	STD	25%	75%
Non-Activist	*DELAY*	0.325	0.25	0.256	0.122	0.471
	MTB	18.361	1.624	4769.83	0.835	3.135
	TURNOVER	21.922	17.412	18.068	11.09	27.118
	INST OWN	0.415	0.343	0.86	0.067	0.707
	NUM WORD	51717.59	42231	40261.79	29913	60460
	NUM UNCERT	658.774	584	412.117	393	821
	AGE	13.898	10	14.48	4	19
	SPI	-1.758	0	369.222	-0.006	0
	EARN VOL	185.369	13.803	1134.782	3.166	61.888
	RET VOL	0.108	0.085	0.089	0.052	0.137
	NUM BUS SEG	0.759	0.693	0.884	0	1.099
	NUM GEO SEG	0.713	0	0.979	0	1.099
Activist	*DELAY*	0.306**	0.235	0.247	0.116	0.426
	MTB	1.039	1.499	67.093	0.841	2.589
	TURNOVER	22.847	17.847	18.498	10.812	29.325
	INST OWN	0.583***	0.619	0.329	0.326	0.856
	NUM WORD	52019.59	42994.5	38115.55	31535	60572
	NUM UNCERT	659.545	590	373.46	421	813
	AGE	20.427***	15	17.508	8	27
	SPI	0.031*	-0.002	3.464	-0.016	0
	EARN VOL	83.154***	12.099	411.063	3.916	38.906
	RET VOL	0.127***	0.103	0.097	0.072	0.154
	NUM BUS SEG	1.32***	1.099	0.896	0.693	2.197
	NUM GEO SEG	1.248***	1.099	1.015	0	2.197

Panel B: Firm-Quarters

Firm-quarters are between 2003-2017 (PIN for 2003-2010), including 7,764 observations for activists and 121,876 observations for non-activists. A firm-quarter is considered activist if quarter-end falls within the activist period and non-activist otherwise. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

N = 129,640		Mean	Median	STD	25%	75%
Non-Activist	*UR*	0.004	0.004	0.085	-0.038	0.047
	UE	0.036	0	9.428	-0.001	0.002
	NONLINEAR	88.879	0	20153.55	0	0
	MTB	10.166	2.088	1742.678	1.262	3.642
	SIZE	7.377	7.33	1.77	6.163	8.51
	LOSS	0.173	0	0.378	0	0
	Q4	0.228	0	0.42	0	0
	BETA	1.126	1.087	0.493	0.799	1.413
	PREDICT	1.285	0.209	175.35	0.095	0.404
	PIN	0.111	0.103	0.054	0.077	0.136
	INST OWN	0.663	0.722	0.288	0.466	0.885
	DISPERSION	-2.704	-2.841	1.302	-3.599	-1.981
	MOMENTUM	0.146	0.139	0.394	-0.051	0.331
	EPS VAR	1.621	0.017	285.67	0.005	0.066
	ΔEPS	-1.475	0.01	497.752	-0.08	0.1
	NUM ANALY	0.936	0.693	0.891	0	1.609
	SALE TURN	1513.795	236.241	5566.215	64.777	903.825
	PRICE	3.337	3.411	0.819	2.841	3.88
Activist	*UR*	0.005	0.003	0.108	-0.039	0.049
	UE	-0.003	0	0.214	-0.002	0.003
	NONLINEAR	0.046	0	2.502	0	0
	MTB	2.775	1.849	65.695	1.168	3.081
	SIZE	6.744***	6.655	1.583	5.599	7.82
	LOSS	0.264***	0	0.441	0	1
	Q4	0.227	0	0.419	0	0
	BETA	1.156***	1.113	0.501	0.841	1.431
	PREDICT	0.321*	0.204	0.491	0.085	0.404
	PIN	0.119***	0.11	0.052	0.085	0.144
	INST OWN	0.765***	0.817	0.253	0.611	0.943
	DISPERSION	-2.535	-2.648	1.328	-3.468	-1.759
	MOMENTUM	0.1***	0.103	0.423	-0.105	0.306
	EPS VAR	0.199	0.025	0.808	0.007	0.079
	ΔEPS	0.009	0.01	0.667	-0.1	0.12
	NUM ANALY	0.779***	0.693	0.849	0	1.386
	SALE TURN	766.433***	203.698	2560.713	59.646	568.553
	PRICE	3.078***	3.162	0.87	2.534	3.707

Table 4: Descriptive Statistics for Activists and Matched Sample

Activism sample is drawn from 2,675 shareholder activism events initiated by 355 activists. There are 546 events for which matches were found. The non-activist sample is generated using radius matching by propensity score of being targeted by an activist, sorted by activism start year. There are 44,148 firm-quarter observations for non-activists and 13,640 firm-quarter observations for activists, and 23,991firm-year observations for non-activists and 4,742 firm-year observations for activists. Variable descriptions are included in Appendix 1.

		Mean	Median	STD	25%	75%
Non-Activist	*UR*	0.006	0.005	0.081	-0.033	0.046
	UE	0.137	0	15.149	-0.001	0.002
	NONLINEAR	229.513	0	33391.752	0	0
	MTB	4.487	2.114	254.801	1.278	3.671
	SIZE	7.372	7.319	1.799	6.118	8.538
	LOSS	0.163	0	0.369	0	0
	Q4	0.229	0	0.42	0	0
	BETA	1.101	1.061	0.502	0.762	1.401
	PREDICT	2.889	0.203	291.704	0.093	0.386
	PIN	0.109	0.101	0.057	0.075	0.134
	INST OWN	0.745	0.752	0.252	0.578	0.901
Activist	*UR*	0.004	0.003	0.099	-0.04	0.049
	UE	-0.001*	0	0.057	-0.001	0.002
	NONLINEAR	0.003	0	0.151	0	0
	MTB	3.481	2.094	22.422	1.347	3.478
	SIZE	7.047***	7.013	1.533	5.912	8.103
	LOSS	0.186***	0	0.389	0	0
	Q4	0.225	0	0.418	0	0
	BETA	1.161***	1.12	0.481	0.855	1.423
	PREDICT	0.269*	0.181	0.363	0.079	0.343
	PIN	0.118***	0.11	0.054	0.083	0.143
	INST OWN	0.796***	0.826	0.207	0.675	0.938

		Mean	Median	STD	25%	75%
Non-Activist	*DELAY*	0.316	0.253	0.245	0.124	0.453
	MTB	6.447	2.141	313.051	1.342	3.665
	TURNOVER	19.075	15.101	14.837	9.818	23.332
	INST OWN	0.533	0.556	0.312	0.263	0.796
Activist	*DELAY*	0.319	0.246	0.251	0.124	0.448
	MTB	3.488	1.925	17.131	1.271	3.181
	TURNOVER	23.729***	18.57	19.716	10.931	30.321
	INST OWN	0.657***	0.712	0.28	0.462	0.877

Table 5: ERC and Activism

Firm-quarters are between 2003-2017. ACTIVE = 1 in (2) and if firm has been the target for a shareholder activist between 2003-2017. POST = 1 for all quarters during activist intervention, measured as if the quarter-end falls within the activist intervention period. In (1), ACTIVE = POST and ACTIVE = 0 for quarters which fall before the activist has entered, measured as filing of the SEC13D with total shareholding greater than or equal to 5%, or after the activist has exited, measured as SEC13D amendment falls below 5% total shareholding. In (2), years after activist exit are eliminated from the sample.

	Full Sample	Matched Sample
	(1)	(2)
INTERCEPT	0.00855	0.02359**
	(1.45)	*(2.03)*
ACTIVE	0.00119	-0.00845
	(0.61)	*(-1.21)*
POST		0.00174
		(0.25)
ACTIVE×POST		0.004
		(0.53)
UE	2.70518***	0.12435
	(3.86)	*(0.1)*
UE×ACTIVE	-1.52352**	1.83455**
	(-2.48)	*(2.49)*
UE×POST		1.55067*
		(1.82)
UE×ACTIVE×POST		-3.03963**
		(-2.1)
NONLINEAR	0.2691	0.03661
	(0.67)	*(0.07)*
SIZE×UE	0.44286***	0.47363**
	(3.18)	*(2.09)*
MTB×UE	0.00199	0.0105**
	(0.5)	*(2.11)*
LOSS×UE	-0.93678*	-1.34829**
	(-1.92)	*(-2.51)*
Q4×UE	-1.46748***	-1.32365***
	(-4.03)	*(-2.67)*
BETA×UE	-1.47022***	-1.1045*
	(-2.67)	*(-1.74)*
PREDICT×UE	-0.49431***	-0.26876
	(-3.43)	*(-1.54)*
Firm-quarters	13,919	6,081
Adjusted R^2	0.1072	0.1022

Dependent variable is UR, firm abnormal return over the value-weighted market return from 2 days before announcement to 1 day after announcement. UE is the unexpected earnings of the firm, calculated as the difference between the actual earnings on announcement date and the median of analyst forecasts from 60 days before to 1 day before announcement date, difference is scaled by price at quarter end. SIZE, MTB, LOSS, Q4, BETA, and PREDICT are included as controls in the regression but not tabulated for ease of interpretation. All standard errors are robust to heteroscedasticity. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

Table 6: Price Delay and Activism

Firm-years are between 2003-2017. ACTIVE = 1 in (2) if firm has been the target for a shareholder activist between 2003-2017. POST = 1 for all years during activist intervention, measured as if shareholder activists held more than 5% of total shareholding from 90 days after beginning of fiscal year to 90 days before end of fiscal year. In (1), ACTIVE = POST and ACTIVE = 0 for years before the activist has entered, measured as filing of the SEC13D with total shareholding greater than or equal to 5%, or after the activist has exited, measured as SEC13D amendment falls below 5% total shareholding. In (2), years after activist exit are eliminated from the sample. Dependent variable is DELAY, price delay calculated using Hou and Moskowitz's (2005) regression of weekly market and firm-specific returns, delay measure is for the fiscal year. All standard errors are robust to heteroscedasticity. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

	Full Sample	Matched Sample
	(1)	(2)
INTERCEPT	0.60892***	0.65655***
	(26.48)	*(18.18)*
ACTIVE	-0.02825***	-0.05003**
	(-3.35)	*(-2.25)*
POST		-0.0625***
		(-2.8)
ACTIVE×POST		0.03999
		(1.63)
MTB	-0.00003694*	-0.0000482***
	(-1.75)	*(-4)*
SIZE	-0.02873***	-0.03043***
	(-11.18)	*(-9.27)*
TURNOVER	-0.00016509	-0.00052121*
	(-0.7)	*(-1.77)*
INST OWN	-0.09405***	-0.07517***
	(-5.01)	*(-3.24)*
Firm-years	5,342	3,112
Adjusted R^2	0.0397	0.0474

Table 7: PIN and Activism

Firm-years are between 2003-2010. ACTIVE = 1 for all years during activist intervention, measured as if shareholder activists held more than 5% of total shareholding from 90 days after beginning of fiscal year to 90 days before end of fiscal year. ACTIVE = 0 for years before the activist has entered, measured as filing of the SEC13D with total shareholding greater than or equal to 5%, or after the activist has exited, measured as SEC13D amendment falls below 5% total shareholding. Dependent variable is PIN, Probability of Informed Trading, provided from the Brown and Hillegeist (2007) dataset, modeled based on daily buy and sell orders (Easley et al., 2002). All standard errors are robust to heteroscedasticity. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

	Full Sample	Matched Sample
	(1)	(2)
INTERCEPT	0.23859***	0.25055***
	(38.74)	*(24.65)*
ACTIVE	0.00505***	-0.01358**
	(3.18)	*(-2.48)*
POST		-0.01437***
		(-2.64)
ACTIVE×POST		0.01693***
		(2.98)
LOSS	-0.00564**	-0.00087596
	(-2.12)	*(-0.23)*
Q4	0.00482***	0.0055***
	(3.61)	*(2.64)*
MTB	-0.00000782	-0.00000842
	(-0.95)	*(-0.67)*
SIZE	-0.01598***	-0.01625***
	(-25.98)	*(-20.51)*
NUM ANALY	-0.0097***	-0.01006***
	(-8.85)	*(-6.97)*
DISPERSION	-0.00064695	-0.00084559
	(-1.5)	*(-1.25)*
EPS VAR	-0.00446***	-0.00489***
	(-4.65)	*(-3.62)*
INST OWN	-0.01312***	-0.00738*
	(-3.84)	*(-1.71)*
Firm-quarters	2,875	1,682
Adjusted R^2	0.3416	0.3592

Table 8: Words in 10-K and Activism

Firm-years are between 2003-2017. ACTIVE = 1 for all years during activist intervention, measured as if shareholder activists held more than 5% of total shareholding from 90 days after beginning of fiscal year to 90 days before end of fiscal year. ACTIVE = 0 for years before the activist has entered, measured as filing of the SEC13D with total shareholding greater than or equal to 5%, or after the activist has exited, measured as SEC13D amendment falls below 5% total shareholding. Dependent variable is NUM WORD or NUM UNCERT, total number of words and total number of uncertainty words, respectively, in the 10-K using Loughran and McDonald's (2011) dataset. All standard errors are robust to heteroscedasticity. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

	NUM WORD	NUM UNCERT
	(1)	(2)
INTERCEPT	15828.0***	245.0***
	(20.09)	*(28.58)*
ACTIVE	3894.6***	41.0***
	(5.61)	*(6.27)*
SIZE	5946.1***	76.5***
	(51.34)	*(61.98)*
MTB	-7.2***	-0.1***
	(-4.51)	*(-4.99)*
AGE	-73.0***	-2.0***
	(-4.77)	*(-13.72)*
SPI	-10173.0***	-121.8***
	(-2.9)	*(-3.19)*
EARN VOL	5.1***	0.1***
	(6.79)	*(8.31)*
RET VOL	24929.0***	344.4***
	(9.45)	*(11.57)*
NUM BUS SEG	615.4**	-5.5**
	(2.34)	*(-2.19)*
NUM GEO SEG	-2992.6***	-33.4***
	(-14.95)	*(-16.2)*
Firm-years	31,050	31,050
Adjusted R^2	0.1426	0.2172

Table 9: Analyst Dispersion and Activism

Firm-quarters are between 2003-2017. ACTIVE = 1 for all quarters during activist intervention, measured as if the quarter-end falls within the activist intervention period. ACTIVE = 0 for quarters which end before the activist has entered, measured as filing of the SEC13D with total shareholding greater than or equal to 5%, or after the activist has exited, measured as SEC13D amendment falls below 5% total shareholding. All standard errors are robust to heteroscedasticity. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

INTERCEPT	-1.28587***
	(-10.42)
ACTIVE	0.0867***
	(2.58)
SIZE	-0.11126***
	(-6.63)
MTB	0.000108*
	(1.76)
BETA	0.43051***
	(12.13)
MOMENTUM	-0.06582
	(-1.58)
EPS VAR	0.71177***
	(10.05)
ΔEPS	-0.36238***
	(-8.78)
LOSS	1.73802***
	(10.14)
NUM ANALY	0.33276***
	(14.63)
Q4	-0.00025
	(-0.01)
SALE TURN	-1.1E-05***
	(-3.39)
PRICE	-0.48904***
	(-20.23)
Firm-quarters	5,930
Adjusted R^2	0.3078

Table 10: Robustness Check for Institutional Ownership

Robustness check with INST OWN ≤ 1. Firm-years are between 2003-2017. ACTIVE = 1 in (2) if firm has been the target for a shareholder activist between 2003-2017. POST = 1 for all years during activist intervention, measured as if shareholder activists held more than 5% of total shareholding from 90 days after beginning of fiscal year to 90 days before end of fiscal year. In (1), ACTIVE = POST and ACTIVE = 0 for years before the activist has entered, measured as filing of the SEC13D with total shareholding greater than or equal to 5%, or after the activist has exited, measured as SEC13D amendment falls below 5% total shareholding. In (2), years after activist exit are eliminated from the sample. Dependent variable is DELAY, price delay calculated using Hou and Moskowitz's (2005) regression of weekly market and firm-specific returns, delay measure is for the fiscal year. All standard errors are robust to heteroscedasticity. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

	Full Sample	Matched Sample
	(1)	(2)
INTERCEPT	0.63922***	0.6873***
	(27.18)	*(18.84)*
ACTIVE	-0.02817***	-0.04802**
	(-3.14)	*(-2.09)*
POST		-0.05931**
		(-2.57)
ACTIVE×POST		0.0415
		(1.64)
MTB	-0.00003742*	-0.00004567***
	(-1.77)	*(-3.66)*
SIZE	-0.02685***	-0.02827***
	(-10.13)	*(-8.37)*
TURNOVER	-0.00035376	-0.00066677**
	(-1.32)	*(-1.99)*
INST OWN	-0.15264***	-0.14575***
	(-7.28)	*(-5.63)*
Firm-years	4,814	2,814
Adjusted R^2	0.0491	0.0600

Appendix 1: Variable Definitions

	Activism
ACTIVE	In OLS regressions, indicator = 1 for all quarters/years during activist intervention. For years, this is measured as if shareholder activists held more than 5% of total shareholding from 90 days after beginning of fiscal year to 90 days before end of fiscal year. For quarters, this is measured as if the quarter-end falls within the activist intervention period. In difference in differences specifications, indicator =1 for activist firms and indicator = 0 for matched sample non-activist firms.
POST	Indicator = 1 for all quarters/years during activist intervention. For years, this is measured as if shareholder activists held more than 5% of total shareholding from 90 days after beginning of fiscal year to 90 days before end of fiscal year. For quarters, this is measured as if the quarter-end falls within the activist intervention period. Quarters and years which fall after the activist has exited, measured as SEC13D amendment falls below 5% total shareholding, are eliminated from the sample.
	Controls
SIZE	Size of firm measured as the log of the market value from Compustat
MTB	The ratio of market value to book value of the firm from Compustat
INST OWN	Percentage of institutional ownership at the firm, measured from 13F filings
BETA	Beta from the market model estimated from the prior year
EPS VAR	Variance of the past 8 quarters' earnings per share
NUM ANALY	Number of analysts issuing a forecast for the quarter
	Quarters
LOSS	Indicator = 1 for quarters whose earnings were negative
Q4	Indicator = 1 for the 4^{th} quarter
	ERC
UR	Firm abnormal return over the value-weighted market return from 2 days before announcement to 1 day after announcement
UE	Unexpected earnings of the firm, calculated as the difference between the actual earnings on announcement date and the median

	of analyst forecasts from 60 days before to 1 day before announcement date, difference is scaled by price at quarter end
NONLINEAR	Captures non-linearity in the earnings response coefficient, calculated as *UE*UE*
PREDICT	Predictability of a firm's earnings series, measured as the average unexpected earnings of the last 8 quarters, where unexpected earnings is calculated using the median of analyst forecasts up to 60 days before the announcement date
	Price Delay
DELAY	Price delay calculated using Hou and Moskowitz's (2005) regression of weekly market and firm-specific returns, delay measure is for the fiscal year
TURNOVER	Turnover for the prior year calculated as total yearly volume divided by shares outstanding
PIN	Probably of Informed Trading calculated following Brown and Hillegeist's (2007) modification of Easley et al., (2002) model where informed trading is inferred based on daily levels of buy and sell orders in the market
	Words in 10-K
NUM WORD	Total number of words in the 10-K using Loughran and McDonald's (2011) dataset
NUM UNCERT	Total number of uncertainty words in the 10-K using Loughran and McDonald's (2011) dataset
AGE	Age of firm measured as years since its first appearance in CRSP
SPI	Special items of the firm from Compustat
EARN VOL	Earnings volatility of the firm, measured as the standard deviation of the past 5 years of earnings
RET VOL	Returns volatility of the firm, measured as the standard deviation of the 12-month monthly returns beginning two years from fiscal year end and ending one year from fiscal year end
NUM BUS SEG	Number of business segments reported from the Compustat historical segments file
NUM GEO SEG	Number of geographic segments reported from the Compustat historical segments file
	Analyst Dispersion
DISPERSION	Log of the standard deviation of analyst forecasts scaled by mean of analyst forecasts

MOMENTUM	Cumulative return from 12 months to 2 months before quarter end
ΔEPS	Change in earnings per share from the prior quarter
SALE TURN	Sales turnover of the firm from Compustat
PRICE	Stock price of the firm at quarter end