Voluntary Disclosures by Activist Shareholders*

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Using hand-collected data, we find that activist shareholders often publicly disclose open letters that demand various changes in corporate operating decisions at their target firms. These letters are associated with significant stock price movements, decreased bid-ask spreads, and key activism outcomes such as directorship wins, corporate strategy shifts, and proxy advisor recommendations. Managers commonly respond to activists' open letters with their own voluntary disclosures. We conclude that activists use voluntary disclosure to mitigate investor information asymmetry and that managers' voluntary disclosures can be induced by activists.

Keywords: Information Asymmetry; Shareholder Activism; Voluntary Disclosure

JEL Classification: D21; G30; G32; G34; K22; L22

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1 Introduction

Verrecchia (1983) predicts that managers' voluntary disclosures are typically induced by compensation contracts based on outcomes such as stock price. Empirical research has therefore linked voluntary disclosure actions to managerial stock compensation (e.g., Nagar et al., 2003). However, Jung and Kwon (1988) predict that managers' voluntary disclosures can also be induced by the informative disclosures of third parties. We therefore empirically assess corporate governance theories that model activist shareholders as investors who may publicly disclose information about their agenda in order to mitigate information asymmetry among investors (e.g., Cohn and Rajan, 2013; Harris and Raviv, 2010). Specifically, we analyze investor response to activists' open letters and how managers respond through their own voluntary disclosure choices.[1]

Following Cohn and Rajan (2013), our main conjecture is that activists possess private knowledge about their agenda at a target firm, and that this agenda is not common knowledge among investors (including managers). For example, an activist may have an agenda to alter a target's future corporate operating decisions. Thus, activists may elect to publicly disclose information about their agenda in order to gain the support of other investors. Consistent with this idea, we observe that activists commonly publicly release open letters on how operations can be improved at their targets, and these letters often seek support from other shareholders for this agenda (see Section 2 and Appendix 1 for examples).

At the same time, Khorana et al. (2017) observe that not all activists make public disclosures. To help explain this result, we conceptually expand the basic cost-benefit framework from classical disclosure theory to an activist's disclosure choice (e.g., Verrecchia, 1983). Disclosure costs for activists may include a decrease in their relative information advantage and their uncertainty about how the market will react to their disclosures. Disclosure benefits may include its facilitating of activists' persuasion and coordination efforts among investors.

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[1]Relatedly, Beyer et al. (2010, p. 297) and Verrecchia (2001) suggest extending the management disclosure literature to the disclosures of other parties.

In addition, Healy and Palepu (2001, Section 2.1) emphasize that voluntary disclosure serves primarily a signaling role in the financial markets. We therefore posit two main reasons that activists' open letters may be informative to investors. First, open letters may provide new information about the activist's existing plan and the probability of its success. Second, open letters may signal to investors that there is a fundamental change in the activist campaign. More importantly, activists' reputation and credibility, as well as the extent to which they reveal new information in their disclosures, will likely further impact whether their disclosures ultimately have meaningful economic consequences such as stock price and bid-ask spread effects.[2] We therefore start our analysis by hand collecting a large sample of activists' open letters from 2012 to 2014 and using several market measures to assess their information content.[3]

We use both unsigned and signed market-adjusted returns measured over varying intervals around the release date of the open letter. We use unsigned returns because we have no ex ante expectation about whether an activist's open letter will be associated with positive or negative returns; we only have reason to believe it may change investors' beliefs about a target. For example, activists may believe their agendas are value increasing when other investors do not. In addition, if activists release private signals in their open letters, we would also expect these letters to impact adverse selection in trade. We therefore complement returns with DTAQ bid-ask spreads.

We first find significant unsigned returns of 4.0 percent for the $[-1, +1\text{ day}]$ interval, where day 0 is the release date of the activist open letter. As we widen the return interval in both directions, the magnitude of the effect increases and remains significant, which suggests that these returns are not sentiment driven. We then assess signed returns and find significant

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[2]An alternative hypothesis is that activists lack credibility in the market, and their disclosures will not be systematically informative (e.g., Stocken, 2000). Section 2 elaborates further on these theoretical arguments.

[3]We take this approach because we are not aware of a large data set that contains the release dates of activists' open letters. For example, SharkRepellent does not include this information. We discuss our data and use of SharkRepellent in more detail in Section 3. Note that our sample includes many well-known activists, including Elliott Management, Icahn Enterprises, Starboard Value, and Third Point Capital; and many well-known target firms, including Allergan, Apple, Darden, and Yahoo.

returns of +2.4 percent for the $[-1, +1$ day$]$ interval; this effect also strengthens as we widen the return interval.[4] Moreover, both unsigned and signed returns increase more for activists who have a stronger reputation in the market, as proxied for by AUM. We also find that both unsigned and signed returns are significantly different from zero when we set the return window to day 0 alone. This analysis and those that follow control for a variety of firm-level and activist-level attributes. We also take steps to ensure that all of our findings are not confounded by other information events such as corporate disclosures, analyst forecasts, the initial announcement of the activist campaign, and 13D filings.

We next build on the prior result by testing whether activists' open letters are associated with investor information asymmetry, as proxied for by DTAQ percent bid-ask spreads. To the extent that activists' open letters reveal to other investors new information about a target's value, we would expect these letters to impact information asymmetry among investors. In theory, the direction of this result depends on whether open letters decrease an activist's relative information advantage or prompt other investors to collect more private information about a target (e.g., Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994).

We find that for the $[-1, +1$ day$]$ interval around the open letter release date, mean percent bid-ask spreads decrease by about 1.7 percentage points relative to a control period. We also find similar results for $[-5, +5$ days$]$ and for day 0 alone.[5] Taken together, our returns and spread findings suggest that activists' open letters are informative to investors and decrease investor information asymmetry.

We next link activists' open letters to key outcomes of their campaigns. Although this analysis extends beyond the scope of the theoretical prediction that activists may make informative disclosures, it speaks to the important question of what benefits accrue to ac-

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[4]We find similar results for raw firm returns and for a variety of other return benchmarks. By comparison, prior studies find that the initial announcement of activist campaigns from 2012 to 2014 is associated with a +6.23 percent CAR, and that "bad news" and "good news" management earnings forecasts are associated with −9.96 percent CARs and +1.93 percent CARs, respectively (Hutton et al., 2003; Khorana et al., 2017, Figure 2). Thus, our magnitudes appear to be reasonable. We show further in Section 4.2 that our magnitudes relate well to those in the activism literature.

[5]In Section 3, we take several steps to ensure that we are capturing the information asymmetry component of spreads and not the order processing component.

tivists for releasing open letters. In a matched-sample analysis of activism campaigns with and without open letters, we find that activism campaigns with open letters are associated with an increased likelihood that activists win a proxy contest, attain a directorship, achieve governance or strategic demands arising from their campaigns, receive a favorable recommendation from Institutional Shareholder Services (ISS) or Glass Lewis, and successfully elicit a special shareholder meeting. These findings are consistent with the idea that by reducing investor information asymmetry, activists' open letters facilitate change at their targets.[6]

In our final analysis, we assess managers' response to activists' open letters. To the extent that activists' open letters cast managers or their firms in an unfavorable light, managers may respond in an attempt to ameliorate these effects. Indeed, Section 2 provides one example of eBay's direct response to an activist's open letter. However, managers may not systematically respond to activists' open letters if they do not believe these disclosures are credible, among other reasons.

As we discuss further in Section 2, the channels through which managers often respond to activists may include 8-K press releases and voluntary amendments to proxy materials (i.e., SEC form DEFA14A). Accordingly, we test and find that managers' 8-K filings increase significantly after the release date of activists' open letters, relative to a control period. We also test and find that DEFA14A filings increase significantly after the release date of activists' open letters, relative to a control period.[7] To account for potential calendar-time patterns in 8-K and DEFA14A filings, we employ a variety of control periods and find similar results throughout. Overall, these findings suggest that managers' voluntary disclosures can be induced by activists, perhaps as managers attempt to shape the public narrative about

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[6]Since we cannot isolate a strong instrument for open letters, we can only analyze the circumstances in which it is optimal for activists to release open letters. An alternative hypothesis is that activists release open letters to manipulate a target's stock price or to achieve some other goal. Our evidence does not support these hypotheses. Also, as Appendix 1 shows, open letters can make many demands; one letter in our sample makes over 50. Our activism outcomes only summarily capture significant changes in a target. See Section 3 for more detail on this feature of our analysis.

[7]Cooper et al. (2017) and Lerman and Livnat (2010) find that firms' press releases are often filed in 8-Ks. We therefore design our 8-K measure to capture these voluntary disclosures. Note that we do not use management forecasts because these may arise from corporate operating decisions unrelated to open letters. This is not as much of a concern with 8-Ks and DEFA14As.

their firm as it relates to activists' letters.

To summarize, theory predicts that activists may use public disclosure to mitigate information asymmetry among investors, and that managers may respond to these disclosures. Consistent with this idea, we find that activists' open letters are informative to investors, as evidenced by significant stock price reactions and decreased bid-ask spreads around their release dates. We also find that activists' open letters are leading indicators of key activism outcomes. Managers appear to respond to open letters with increased voluntary disclosure of their own. These findings obtain across a variety of specifications and are validated by several placebo tests and the use of control firms.

Our findings make several contributions to the literature. First, the seminal study by Verrecchia (1983) predicts that managers' voluntary disclosures are typically induced by compensation contracts based on outcomes such as stock price. Empirical research has therefore linked voluntary disclosure to managerial stock compensation (e.g., Nagar et al., 2003). However, Jung and Kwon (1988, p. 147) predict that third-party disclosures can also trigger managers' reaction function. Consistent with this idea, our findings suggest that some managers' voluntary disclosure choices are driven by activists' disclosures.

Second, our findings have corporate finance implications to the extent that activists' open letters impact stock price, information asymmetry, and management disclosures, and thus a firm's cost of capital (e.g., Armstrong et al., 2011). Relatedly, we also complement theoretical research that links the cost of capital to management disclosures. These studies can be conceptually expanded to the disclosures made by any party, including shareholders (e.g., Diamond and Verrecchia, 1991). Indeed, there have been calls for additional research on the economic effects of disclosures made by third parties (e.g., Beyer et al., 2010, p. 297).

Third, our findings complement standard price-setting models that assume that investors act on information solely by trading in company shares (e.g., Grossman and Stiglitz, 1980). We show that this is not the case for all investors: some investors elect to release some of their information publicly. In this respect, we complement Ljungqvist and Qian (2016),

who study 124 short-sales and find that short sellers facilitate downward price pressure by releasing unfavorable reports about their shorted firms. We also extend Back et al. (2018) and Edmans (2009) by showing that activists may be able to alter a target's stock liquidity by actions other than trading, such as public disclosure.

The remainder of this study is organized as follows. Section 2 provides institutional background and motivates our hypotheses in light of prior literature. Section 3 describes our data. Section 4 provides our empirical results. Section 5 concludes.

2 Institutional Background and Hypothesis Motivation

In 2017, activist funds managed over \$120 billion in assets and attracted nearly a quarter of all hedge fund flows (Khorana et al., 2017). The increasing presence of activists in the financial markets has spawned a considerable number of studies on their activities (e.g., Brav et al., 2015; Edmans and Holderness, 2017). In particular, recent theoretical studies model how activists' information dissemination activities may help to facilitate their campaigns (e.g., Cohn and Rajan, 2013; Harris and Raviv, 2010). However, these theories remain largely untested.

At the start of an activist's campaign, other investors in the target are inherently uninformed about an activist's agenda. This feature of activism drives the basic theoretical result that activists possess private knowledge about a target that creates problematic information asymmetry among investors. One key prediction from these models is that activists may publicly disclose information about their agenda in order to decrease this information asymmetry and avert the failure of their campaigns.[8] We analyze this prediction in the setting of activists' open letters.

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[8]This argument assumes that any free-rider concerns do not deter such activities (e.g., Admati et al., 1994). Activists may also use private disclosure channels such as phone calls to specific investors. However, we would not expect to find a large investor reaction to these activities.

We include a brief excerpt from the 12-page, June 2, 2014, open letter released by Starboard Value LP (the activist) and addressed to the CEO of the packaging company MeadWestvaco Corporation (the target):

> The purpose of this letter is to outline our thoughts and perspectives on value creation opportunities at the Company. We look forward to continuing our dialogue with the Company and will make ourselves available to discuss the contents of this letter at your convenience.... We believe that the combined value of MeadWestvaco's assets far exceeds the Company's current share price, and this value is being obscured by MeadWestvaco's excessive corporate overhead and conglomerate structure. In order to unlock this value, we believe that management should take the appropriate actions, as outlined in more detail below, to improve operating margins, explore a separation of the Company's remaining non-core assets, and improve capital allocation.... We believe that there is an opportunity to reduce corporate overhead by consolidating regional headquarters, reducing duplicative administrative staff, and flattening the organization structure. Reducing the Company's corporate overhead to be in line with peers would result in $160 million of cost savings, significantly higher than the Company's target range of between $50 million and $62.5 million.... Based on our analysis, we believe MeadWestvaco could expand its Food & Beverage segment margins to be in line with Graphic Packaging's Paperboard segment margins, which would result in EBITDA of $612 million, or more, by 2015. This would imply that the Food & Beverage business is worth over $4.6 billion, or $29 per share, assuming an industry average 7.5x EV/EBITDA valuation multiple.

The above letter spans 5,299 words and provides suggestions on how to improve many aspects of MeadWestvaco's business.[9] The $[-1, +1$ day$]$ market-adjusted return for this letter at MeadWestvaco is +7.4 percent, where day 0 is the letter's release date.

The above is but one example of an activist's open letter that appears to be informative for investors (see Appendix 1 for additional examples). However, it is not ex ante obvious that all open letters will be informative for investors. For example, some open letters may not be as specific as Starboard's letter about MeadWestvaco. Open letters may also be inconsequential in markets where public information is already rich (e.g., Leuz and Verrecchia, 2000). Alternatively, some open letters may not be credible to other investors (e.g., Rogers and Stocken, 2005; Stocken, 2000).

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[9]For the full open letter, see `https://goo.gl/D2VRAd`.

Using stock returns as our first proxy for the information content of open letters, these considerations lead to our first hypothesis, stated in the null:

H1: Activists' open letters are not associated with stock price reactions at a target around their release.

To the extent activists' open letters are informative to investors, they may not only affect price, but also information asymmetry among investors. The theoretical basis for this argument is that activists' open letters may substitute for their private information collection, thereby decreasing adverse selection and information asymmetry in the market for firm shares—e.g., smaller bid-ask spreads (e.g., Diamond and Verrecchia, 1991; Glosten and Milgrom, 1985).

Conversely, some investors may respond to activists' open letters by collecting more private information, thereby increasing adverse selection and information asymmetry in trade— e.g., larger bid-ask spreads (e.g., Kim and Verrecchia, 1994). Yet another possibility is that activists' open letters could have no effect on information asymmetry. For example, if activists' open letters identically change every investor's beliefs of the mean levels and priced covariances of a target's future payoffs, then prices could change without affecting information asymmetry. These considerations lead to our second hypothesis, stated in the null:

H2: Activists' open letters are not associated with a target's bid-ask spread.

H1 and H2 assess whether activists use open letters to inform other investors. To the extent these letters prove persuasive, we would also expect them to correspond to activism outcomes. For example, managers may face information asymmetries with activists that open letters partly mitigate. Managers may also be more likely to accommodate activists' demands if they believe other investors are convinced by activists' open letters.

By contrast, open letters notwithstanding, activists may still fail to enact change at their targets due to their low minority ownership, if other investors disagree with their agendas, or for other reasons. Activists may also not follow through on the commitments made in their open letters, or they may use open letters to manipulate the stock price at a target or

to achieve some other goal. In these cases, we would expect no relation between open letters and activism outcomes. We would also expect this outcome if activists achieve the same level of persuasion by using alternative communication channels when they do not release open letters.

The above arguments suggest that the relation between open letters and activism outcomes is ambiguous, leading to our third hypothesis, stated in the null:

H3: Activists' open letters are not associated with activism outcomes.

We next test managerial response to activists' open letters. Specifically, we follow Jung and Kwon (1988, p. 147), who predict that the public disclosures of third parties can trigger managers' reaction function, thus leading to "the release of information that would otherwise be withheld by managers." The logic is that managers may seek to ameliorate any potentially unfavorable consequences of third-party disclosures. This is a salient feature of our setting because many open letters explicitly raise concerns about the competency of managers (see Appendix 1 for examples).

To illustrate managerial response in our setting, consider the following excerpt from eBay's response to Carl Icahn's open letter that criticized eBay[10]:

> **eBay Inc. Responds to Carl Icahn's Feb. 24 Open Letter to Stockholders.** New eBay shareholder Carl Icahn has cherry-picked old news clips and anecdotes out of context to attack the integrity of two of the most respected, accomplished and value-driven technology leaders in Silicon Valley. Marc Andreessen and Scott Cook bring extraordinary insight, expertise and leadership to eBay's board, which is scrupulous in its governance practices and fully transparent with regard to its directors' other affiliations and businesses. And eBay Inc. President and CEO John Donahoe is widely respected for his turnaround of eBay and leadership of the company over the past six years. As we are sure our other shareholders would agree, we prefer to engage in more constructive and substantive discussions of why, in our view, PayPal and eBay are better together. Instead, Mr. Icahn unfortunately has resorted to mudslinging attacks against two impeccably qualified directors.

The above example notwithstanding, managers may not systematically respond to activists' open letters if they do not view activists' letters as credible threats to their firms or

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[10]See the following DEFA14A filing for eBay's full response: `https://goo.gl/u4CWzu`.

careers. Managers may also resort solely to private negotiations with the activist or may disregard the activist so as not to expand the scope of monitoring by the board and other investors (e.g., Adams and Ferreira, 2007). Another possibility is that the benefit to managers of responding might not exceed any proprietary disclosure cost, or some other private benefit of not responding (e.g., Bernard, 2016). For example, managers may wish to maintain their private information advantage or to extract personal benefits from nondisclosure, as when their compensation is linked to stock price (e.g., Nagar et al., 2003). Also, more disclosure may facilitate litigation or further advantage activists (e.g., Kim and Verrecchia, 1994; Kothari et al., 2009).

These considerations lead to our final hypothesis, stated in the null:

H4: Managers do not respond to activists' open letters with disclosures of their own.

3 Overview of Data

We identify activists' open letters by using Dow Jones Factiva to search a variety of media outlets. Our reading of these letters suggests that virtually all of them are aimed at a target's board, management, or other shareholders—or some combination of these. We therefore use the following search form in Factiva: *("public letter" or "in a letter" or "open letter" or "in a recent letter" or "in its letter" or "sent a letter" or "wrote a letter" or "filed a letter" or "issued a letter" or "delivered a letter" or "released a letter" or "to a letter sent" or "their letter") not ("buffett" or "obama").*[11] Our sources include Barron's, Bloomberg, Business Wire, Financial Times, The New York Times, and The Wall Street Journal. To ensure our analysis has enough statistical power, our coverage period is January 1, 2012 to December 31, 2014.

Our search yields 15,485 articles, almost all of which are unrelated to our setting. We therefore read the articles to isolate activists' open letters and their release dates. Our

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[11]We eliminate from our search "buffett" and "obama" because we are not interested in Warren Buffett's annual letters to Berkshire Hathaway shareholders, nor the numerous letters that are sent to former president Barack Obama and covered by the media.

final sample consists of 264 open letters. Our sample is limited to 2012 to 2014 due to the considerable time that it takes to hand screen the letters. However, our sample size compares well to many other studies in the literature. To provide a few examples, McCahery et al. (2016) use a sample of 143, Klein and Zur (2009) use a sample of 151, and Schwartz-Ziv and Weisbach (2013) use a sample of 247. Also, in a study that is similar in spirit to ours, Ljungqvist and Qian (2016) use a sample of 124 reports released by short sellers.

To analyze whether activists' open letters correspond to a target firm's stock price movements, information asymmetry, and disclosures, we manually link our sample to CRSP, Compustat, and I/B/E/S. We lose 9 observations that cannot be linked to all three of these databases.

For our returns analyses in H1, we compute abnormal returns as raw firm returns minus value-weighted market returns over our respective return intervals. We find similar results when we adjust raw firm returns by equal-weighted market returns, when we use raw firm returns, and when we compute various factor-based alphas (e.g., Hutton et al., 2003, fn. 19).

To measure information asymmetry for H2, we follow prior studies and use DTAQ abnormal percent bid-ask spreads to approximate the information asymmetry component of spreads (e.g., Balakrishnan et al., 2014; Holden and Jacobsen, 2014). Foucault et al. (2013, p. 80) note that spreads are comprised of three components, including (1) the cost of trading with better informed investors, (2) the cost of holding stock in inventory, and (3) order-processing costs. Our primary interest is components (1) and (2), which are driven primarily by information asymmetry in trade (Foucault et al., 2013, Section 3.2.2). That is, market makers' trading losses and losses on holding inventory both increase when they trade with better informed investors, as in Glosten and Milgrom (1985). By contrast, order-processing costs are driven by settlement fees, trading technology, and competition in dealer markets, all of which are relatively stable from year to year (Foucault et al., 2013, Section 3.2.2). Thus, since (3) is relatively stable over time and (1) and (2) are driven primarily by information asymmetry in trade, we use abnormal spreads—or spreads relative to a tempo-

rally close control period—in our regressions. Our control period is $[-60, -30$ days$]$, where day 0 is the release date of the open letter. Accordingly, we compute percent quoted spreads as follows:

$$\text{Percent Spreads}_{ft} = 100 \times \frac{Ask_{ft} - Bid_{ft}}{(Ask_{ft} + Bid_{ft})/2}, \tag{1}$$

where index f represents a target firm, and index t represents the day.

For each firm-day value, we follow Holden and Jacobsen (2014) and use the time-weighted percent quoted spread computed during trading hours. We find qualitatively and statistically similar results when we use DTAQ effective percent spreads and percent spreads computed from CRSP data. For each respective window over which we measure spreads, we compute the arithmetic mean value of Percent Spreads$_{ft}$. We then subtract from this value the mean value of Percent Spreads$_{ft}$ over the interval of $[-60, -30$ days$]$ to arrive at our measure of abnormal spreads for a target firm, Percent Spreads$_i$.[12]

To analyze whether open letters correspond to activism outcomes for H3, we manually link each open letter to SharkRepellent, a corporate governance database maintained by FactSet Research Systems and Thomson Reuters. This comprehensive database records all activism campaigns at publicly traded U.S.-headquartered companies (regardless of industry and firm size) and provides accompanying campaign outcomes. Since not all of our open letters pertain to U.S.-headquartered companies, we can link only 203 of our observations to SharkRepellent. However, this only affects our analysis of H3. We still include some SharkRepellent data in our analyses for H1, H2, and H4. To do this without losing any observations, we follow Khanna et al. (2015, p. 1230) and create an indicator variable that equals one for observations that do not link to SharkRepellent, in which case we also set the SharkRepellent variables equal to zero (see Section 4). Our inferences are similar when we exclude observations that do not link to SharkRepellent.

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[12]We find similar results when we log transform one plus spreads.

For completeness, we include five measures of campaign success: (1) whether the activist wins a proxy contest at a target, (2) whether the activist attains a directorship at a target, (3) whether the activist achieves governance or strategic demands at a target, (4) whether the activist receives the recommendation of ISS or Glass Lewis, and (5) whether the activist successfully elicits a special shareholder meeting. Note that SharkRepellent defines "governance or strategic demands" as any governance or corporate operating decision that traces to an activist's agenda. As Appendix 1 shows, open letters can make many demands—one letter in our sample makes over 50. Our five activism outcomes only summarily capture significant changes in a target, which we consider a conservative approach.

To measure managerial response to activists' open letters for H4, we use disclosure filings from the WRDS SEC Analytics database. Our first measure is the frequency of 8-K press releases. Companies typically file press releases in voluntary 8-K items 2, 7, 8, and 9; we therefore limit our analysis to these 8-Ks (e.g., Balakrishnan et al., 2014; Lerman and Livnat, 2010). However, we find similar results when we include all 8-Ks, which suggests our results are not driven by mandatory 8-K filings, which include those pertaining to a change in auditor, a change in shell company status, as well as other actions.[13]

Our second measure of disclosure for H4 is the frequency of amendments to DEF 14A filings, or DEFA14A filings. DEF 14A filings represent proxy materials that are filed annually by all public companies. DEFA14A are voluntary amendments to the DEF 14A that can include additional information that is relevant to the proxy materials, including managers' views on activists' actions (see Section 4.5 and fn. 10 for an example).

To construct our 8-K measure of disclosure, Δ 8-K Filings$_i$, we compute the number of 8-K filings over the post period of $[0, +90$ days$]$ minus the number of 8-K filings over the control pre period of $[-365, -275$ days$]$. This control pre period represents the $[0, +90$ days$]$ period from the prior year, which accounts for the possibility that 8-K filings follow a

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[13]See http://www.sec.gov/answers/form8k.htm for more detail. Several recent studies also use 8-Ks, including Balakrishnan et al. (2014), Bozanic et al. (2018), Guay et al. (2016), Schoenfeld (2017), and Shroff et al. (2017).

calendar-time pattern. We also use $[-90, -1 \text{ day}]$ as an alternate control period.

To construct our DEFA14A measure of disclosure, Δ DEFA14A Filings$_i$, we compute the number of DEFA14A filings over $[0, +90 \text{ days}]$ minus the number of DEFA14A filings over $[-365, -275 \text{ days}]$. Since DEFA14A filings follow a strict calendar-time pattern based on when firms release proxy materials (which is typically stable from year to year), the prior year control window is the strongest and most appropriate control window for our test. Our decision to use 90-day windows for both of our disclosure measures is motivated in part by Guay et al. (2016, p. 250), who argue that managers need time (up to 90 days in their analysis) to observe investors' interpretation of new information and build a response. Nonetheless, our inferences are qualitatively similar when we decrease the 90-day window to 60 and 30 days.

We also include a set of control variables. These variables include log of market value of equity, since firm size has been linked to returns and spreads (e.g., Chordia et al., 2008; Fama and French, 2004); ROA, since profitability has been linked to disclosure (e.g., Beyer et al., 2010); R&D and capital expenditures, since target firms more active in these activities could have more information to disclose; analyst following and institutional ownership, since institutions and analysts might affect disclosure (e.g., Bushee and Noe, 2000; Lang and Lundholm, 1996); and cash holdings, which could proxy for agency conflicts and thus affect how investors and managers respond to activists' open letters (Shleifer and Vishny, 1997, p. 746). We also include SharkRepellent's proprietary "BulletProof" measure of managerial entrenchment at a target, since managerial entrenchment might decrease both the likelihood that an activist's campaign succeeds and the credibility of the open letter.[14]

We also include activist-level attributes. These variables include the activist's ownership level in a target, since this may correspond to whether an activist's open letter is credible. We also include activist AUM, since increased AUM could represent the activist's reputation in the market. The idea is that absent a strong reputation, investors would not invest in the

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[14]This variable increases with managerial entrenchment, similar to the E-index in Bebchuk et al. (2009).

activist to such an extent, which implies that AUM is at least a partial signal of the activist's reputation. Reputation in our setting could also be viewed through the lens of management, who might view more AUM as representing an activist's ability to enact his or her agenda because he or she has more resources to run a campaign.

In our regressions of spreads, we also include abnormal turnover, where turnover is measured as trading volume divided by shares outstanding (Chordia et al., 2000, 2001). This helps to ensure that our results are not driven by any trading activities that may be unrelated to the open letters. We also find qualitatively and statistically similar results for spreads when we control for abnormal dollar-value turnover, abnormal log of trading volume, and squared returns in place of turnover (e.g., Holden et al., 2013).

Note that including the above regressors is unlikely to significantly affect our analyses of spreads and disclosure because our use of control periods in effect yields firm-fixed-effect regressions, which mostly eliminate persistent firm-specific factors such as industry membership. However, we still use these regressors to perform important static cross-sectional analyses of our results (e.g., size effects, etc.).

Also, since our control periods for spreads and disclosure are temporally close to activists' open letter dates, this procedure mostly eliminates the impact of any macro trends in spreads and disclosure that affect all firms. All variables are winsorized at the two percent level except for indicator variables. Variables that have a natural lower bound of zero (e.g., analyst following) are winsorized from the top only. All of our results are qualitatively similar when we do not winsorize and when we winsorize at the 5 percent level. For the regressions, we standardize the independent variables in order to facilitate interpretation of the intercept (see Section 4). We provide the exact equations for all of our variables in Appendix 2.

4   Empirical Results

4.1   Univariate Statistics

Our sample period ranges from January 1, 2012 to December 31, 2014 and includes 255 activist open letters. As Table 1, Panel A shows, the mean market value of target firms in our sample is about $20.7 billion; in sum, our sample covers target firms valued at about $527.9 billion. The mean target in our sample has −0.1 percent ROA, an analyst following of about 2, and institutional ownership of about 56.8 percent. The average activist in our sample oversees $8.2 billion in assets under management (AUM) and owns about 5.7 percent of target companies' common stock. On average, activists release open letters about 57 days after they announce their campaign, which suggests that our returns results are not mixing with returns around the announcement of the activist campaign.[15]

On average and at the median, our unsigned and signed CAR measures are all positive, our abnormal spread measures are all negative, and our 8-K and DEFA14A measures are both positive. These findings provide initial evidence that activists' open letters are informative to investors, decrease investor information asymmetry, and elicit a disclosure response from managers. We assess these findings using multivariate specifications in the sections that follow.

Table 1, Panel B shows that all year-quarters in our sample are well represented. Within year, activists' open letters occur most frequently in quarter one, an expected outcome given that proxy voting occurs for most firms in the spring. Table 1, Panel C shows that all 12 Fama-French industry groups are also well represented, with the most frequent industries being business equipment, wholesale/retail, health care, and finance. In sum, our sample represents a diverse cross-section of activists and target firms over several years.

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[15]Campaign announcement dates (but not open letter dates) are available in SharkRepellent for the 203 firms to which we can match our hand-collected sample. In Section 4.2, we directly rule out confounding information events using a comprehensive database of corporate disclosures and analyst reports.

4.2   Stock Price Reaction to Activists' Open Letters

We next test H1 by linking activists' open letters to target firm CARs around the release date of the open letters. We use a variety of return intervals to ensure that we fully capture investor response to the letter. We do not use intraday returns because we do not have second- or minute-level timestamps for the open letters.

First, we use the day 0 CAR, which best mitigates any potential influence of other information events. We then widen our CAR interval to $[-1, +1$ day$]$ and $[-5, +5$ days$]$. This ensures that investors have enough time to process and trade on the open letters and follows prior studies on corporate disclosure, most of which give investors at least several days to react to information releases (e.g., Balakrishnan et al., 2014; Hutton et al., 2003). Likewise, activism studies typically analyze returns to the announcement of activism using return windows of up to 20 days (e.g., Brav et al., 2008; Klein and Zur, 2009). We show shortly that our returns results are not confounded by the announcement of the activism campaign.

We start with unsigned CARs. Unsigned returns are used extensively in the literature when the direction of the return around an information event is ex ante ambiguous (e.g., Bushee et al., 2010; Matsumoto et al., 2011). Accordingly, in Table 2, Columns 1 to 3, we regress unsigned CARs on target-firm-level and activist-level attributes. Since we are interested in the intercept term (or mean effect) and many of our independent variables never equal zero in our sample, we standardize the independent variables (but not the dependent variables). This considerably simplifies the interpretation of the intercept by eliminating the need to make a series of computational corrections (we apply the same procedure to the spread and disclosure regressions that follow). At the same time, this approach enables us to test whether our static regressors are associated with the values of our CARs (e.g., any size effect, etc.).

In Table 2, Column 1, we find that the day 0 unsigned CAR is 2.2 percent (or 220

basis points; 1% level).[16] When we widen the interval in Columns 2 and 3 to $[-1, +1$ day] and $[-5, +5$ days], the magnitude of the intercept increases to 4.0 percent and 5.8 percent, respectively (1% level for both). Taken together, these findings suggest that open letters are informative to investors, but they do not speak to the direction of investors' belief revisions.

Turning to signed returns in Table 2, Columns 4 to 6, the day 0 CAR is +1.3 percent, the $[-1, +1$ day] CAR is +2.4 percent, and the $[-5, +5$ days] CAR is +3.5 percent (1% level for all). Investors thus appear to view open letters as favorable signals for a target. To the extent this finding is driven by investor support for the content in the open letters, we next assess whether this finding is more pronounced when an activist's reputation is stronger.

Interestingly, the magnitudes of both the unsigned and signed CARs are increasing in the activist's AUM, which is our proxy for the activist's reputation. This finding suggests that activists' reputations increase investor response to their open letters. One interpretation of this result is that either the credibility or the quality of an activist's open letter is in part a function of his or her reputation in the market for corporate control.

Among the other regressors, a target's market value is negatively associated with the CARs. One explanation for this result is that the credibility of open letters decreases in larger firms for which it is more expensive for the activist to enact change (Edmans and Holderness, 2017, Section 3). Another possibility is that larger firms have richer public information environments to begin with, thereby making it costlier for the activist to acquire a considerable information advantage over other investors (e.g., Anilowski et al., 2007; Fama and French, 1995). An activist's ownership level is also negatively associated with the CARs. One interpretation of this result is that activists reveal less information through open letters in circumstances where they demand less support from other investors, i.e., when activists have more explicit control rights in a target.

To put the magnitudes of the above results into context, Khorana et al. (2017, Figure

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[16]As noted in Section 3, we compute CARs as firm returns minus value-weighted market returns over the respective return intervals. However, we find similar results when we use equal-weighted market returns, when we use raw firm returns, and when we compute various alphas. We are not interested in creating trading strategies for activists' open letters.

2) find that the initial announcement of activist campaigns from 2012 to 2014 is associated with a CAR of +6.23 percent. Brav et al. (2008) find that the announcement of hedge fund activism from 2001 to 2006 is associated with a CAR of +7.0 percent. Barclay and Holderness (1991) find that block trades from 1978 to 1982 are associated with a CAR of +5.6 percent. Our signed returns are not quite as large in magnitude as these findings, but they still suggest that activists' open letters are informative to investors. For another comparison, "good news" management earnings forecasts are associated with a +1.93 percent CAR, and "bad news" management earnings forecasts are associated with a −9.96 percent CAR (Hutton et al., 2003). We next ensure that our returns results are not driven by confounding information events such as the announcement of the activist campaign.

We focus specifically on unsigned and signed returns for the $[-1, +1$ day$]$ window, as this provides us with several days over which we can check for confounding information events. To compile a comprehensive data set of information events, we first merge the full WRDS SEC Analytics database with the I/B/E/S management guidance and I/B/E/S earnings announcements databases. Note that the WRDS SEC Analytics database includes virtually all SEC filings by public companies, as well as 13Ds, 13Gs, and 13Fs. We also merge in the I/B/E/S financial analyst databases, including those for analyst earnings forecasts, price targets, and stock recommendations. This gives us a comprehensive set of potentially confounding information events, including (but not limited to) 10-K filings, 10-Q filings, 8-K filings, 13D filings, management guidance, and analysts' earnings forecasts. This approach also accounts for earnings calls, virtually all of which occur on earnings announcement days that will be identified by I/B/E/S earnings announcements.

We find that only nine of our observations have one or more confounding information events in the $[-1, +1$ day$]$ window around the open letter release date. Our returns results are qualitatively and statistically similar when we drop these observations from our regressions. When we use the window of $[-5, +5$ days$]$, we find that 46 of our observations have one or more confounding information events. When we drop these 46 observations from our $[-1, +1$

day] *and* [−5, +5 days] CAR regressions, we again find qualitatively and statistically similar results. For the activist open letters that match to SharkRepellent, we find that these open letters are released on average about 57 days after activist campaign announcement dates, which suggests that the announcement of the campaign is likely not driving our results. Nonetheless, we find similar [−1, +1 day] results when we drop the 21 observations that fall within 5 days of the announcement date. Collectively, these findings suggest that our returns results are in fact driven by activists' open letters.

We also perform placebo tests to ensure that activists' open letters are not released during periods in which all of our target firms are experiencing significant price movements over extended periods. We assign to each open letter two new release dates, one that is 90 days before its actual release date, and one that is 90 days after its actual release date. We then re-run our day 0 and [−1, +1 day] returns regressions and do not find significant results for any of these tests. This provides additional confidence that our returns results are driven by activists' open letters.

4.3 Activists' Open Letters and Investor Information Asymmetry

Theory suggests that to the extent activists release part of their private information through open letters, this can change investors' beliefs about the mean levels and the priced covariances of a target's future payoffs. This is what the previous section tested using returns. However, theory also suggests that such private information revelation by activists may decrease adverse selection in the market for firm shares. This effect can be tested directly by analyzing a target's bid-ask spread (e.g., Glosten and Milgrom, 1985). We therefore next examine H2 by testing whether activists' open letters are associated with spreads.

We analyze abnormal percent spreads for day 0, [−1, +1 day], and [−5, +5 days], where day 0 is the release date of an activist's open letter.[17] Our control period is [−60, −30 days]. To illustrate how we compute abnormal spreads for the [−1, +1 day] window, we compute a

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[17]As we discuss in Section 3, our use of abnormal spreads to proxy for information asymmetry follows prior literature.

target firm's mean percent spread over the $[-1, +1$ day$]$ window and subtract from this the mean percent spread over the $[-60, -30$ days$]$ window. This procedure is similar to using firm-fixed effects, in that it mostly eliminates any persistent firm-level factors that might be driving spreads (e.g., industry membership). Also, since the control period is temporally close to the open letter date, this procedure mostly eliminates any macro trends in spreads that affect all firms. We provide our exact equations in Appendix 2.

In Table 3, we regress abnormal percent spreads on target-firm and activist attributes. Note again that since we are interested in the intercept term and many of our independent variables never equal zero in our sample, we standardize the independent variables (but not the dependent variables). This considerably simplifies the interpretation of the intercept term. At the same time, we recognize that our dependent variables are differenced, whereas some of our independent variables are in their level forms. This approach enables us to analyze static cross-sectional effects such as firm size, ROA, and cash holdings—measures that are not as amenable to differencing over our short windows. However, we do include differenced independent variables for other determinants of spreads such as share turnover.

In Table 3, Column 1, we find that day 0 abnormal spreads are -0.013 percentage points (1% level). The interpretation is that the mean percent spread on day 0 decreases by 0.013 percentage points from its mean value in the control period of $[-60, -30$ days$]$. In Column 2, we find that $[-1, +1$ day$]$ abnormal spreads are -0.017 percentage points (1% level), and in Column 3, we find that $[-5, +5$ days$]$ abnormal spreads are -0.012 percentage points (1% level). Overall, these findings are consistent with the idea that activists release part of their private information through open letters, thus decreasing information asymmetry among investors in the target.

Among the controls, log of market value is also significantly positively associated with abnormal spreads across the three tests, which suggests that open letters impact spreads less in larger firms. Similar to Section 4.2, this could be due to the fact that larger firms generally have richer information environments to begin with, which may increase the cost

for the activist to acquire an information advantage over other investors (e.g., Fama and French, 1995). We do not find a significant cross-sectional effect for activist reputation as proxied for by AUM.

We also perform a set of checks for confounding information events. As identified in the prior section, we drop nine observations that have one or more confounding information events in the $[-1, +1$ day$]$ window, as well as the 21 observations that fall within 5 days of the activist campaign announcement date. Also, if the activist campaign announcement date falls within the $[-60, -30$ days$]$ control pre period for spreads, then we remove the $[-5, +5$ days$]$ window around the campaign announcement date from the control pre period. Our spreads results are qualitatively and statistically similar for all of these analyses. We then drop the 46 observations that have one or more confounding information event in the $[-5, +5$ days$]$ window. We again find similar results for the day 0, $[-1, +1$ day$]$, and $[-5, +5$ days$]$ tests. We also find similar results when we include as a regressor contemporaneous abnormal spreads averaged over all other firms in a target's SIC industry. This regressor in effect serves as a set of control firms, which suggests that we are not capturing an unrelated pattern in spreads that is common to firms similar to the target.[18]

We also perform a placebo test to ensure that activists' open letters are not systematically released during periods in which target firms are experiencing decreased spreads. We assign to each open letter two new release dates, one that is 90 days before its actual release date, and one that is 90 days after its actual release date. We then re-run our day 0 and $[-1, +1$ day$]$ spreads regressions and do not find significant results for these tests. This finding increases our confidence that our information asymmetry results are driven by activists' open letters.

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[18]This approach follows Bertrand et al. (2004) and is similar to that in Cheng et al. (2004, Table 10).

4.4 Activists' Open Letters and Campaign Outcomes

We next test H3 by checking whether activists' open letters are associated with activist campaign outcomes. Our motivation is that to the extent activists' open letters persuade (or convince) other shareholders to support their agenda, activists' open letters should correspond to the outcomes of activist campaigns. For example, if activists' open letters compel other shareholders to vote for activist-sponsored directors, then open letters should be associated with activist directorship wins.

In Table 4, we tabulate our activist campaign success variables. We include five measures of campaign success: (1) whether the activist wins a proxy contest at a target, (2) whether the activist attains a directorship at a target, (3) whether the activist achieves governance or strategic demands at a target, (4) whether the activist receives the recommendation of ISS or Glass Lewis, and (5) whether the activist successfully elicits a special shareholder meeting.[19] Note that these measures depend directly on the success of the given campaign initiative. For example, we are not interested in whether the activist ran a proxy contest, but in whether the activist won a proxy contest.

To analyze whether activists' open letters impact these outcomes, ideally we would assign activists to release open letters at random, but this is infeasible. A second-best alternative is to match activist campaigns with open letters to activist campaigns without open letters. In this respect, Brav et al. (2008, p. 1751) and Klein and Zur (2011, p. 1742) recommend matching on industry and firm value.[20]

Accordingly, we match our 203 activist campaigns with open letters and SharkRepellent data (our treatment sample) to 203 activist campaigns without open letters (our control sample) using nearest-neighbor matching by industry and firm value, without replacement; i.e.,

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[19]As Section 3 notes, SharkRepellent defines "governance or strategic demands" as any governance or corporate operating decision that traces to an activist's agenda.

[20]Brav et al. (2008) and Klein and Zur (2011) are interested in matching hedge fund targets to non-hedge fund targets in order to compute the treatment effects of hedge fund activism. They recognize that there are no strong instruments for becoming a hedge fund target. Edmans and Holderness (2017, p. 542-543) similarly argue that there are no credible instruments for the actions of activists.

we sort by industry and then by firm value. Both sets of firms must link to SharkRepellent so that we can obtain data on our five activist campaign outcome variables.

After matching, we then statistically compare activist campaign outcomes across the treatment and control samples. We do not mean to imply causality with our use of the terms "treatment sample" and "treatment effect." We use these terms only to simplify our discussion.

We provide our results in Table 4. We find that when an activist releases an open letter, the likelihood that the activist wins a proxy contest increases by 25.39 percentage points (1% level), the likelihood that the activist attains a directorship at a target increases by 11.24 percentage points (10% level), the likelihood that the activist achieves governance or strategic demands at a target increases by 35.50 percentage points (1% level), the likelihood that the activist receives the recommendation of ISS or Glass Lewis increases by 25.39 percentage points (1% level), and the likelihood that the activist successfully elicits a special shareholder meeting increases by 7.84 percentage points (10% level). One interesting anecdote from our results is that when Starboard targeted Darden in 2014, ISS and Glass Lewis cited passages from Starboard's open letter as justification for their recommending Starboard's directors. Taken together, these findings are consistent with the idea that activists' open letters serve to facilitate the activist's goals at a target.

There are caveats to these results due to the fact that we cannot isolate a strong instrument for activists' open letters. Foremost, we cannot fully rule out the possibility that activists release open letters when they anticipate that their campaigns will succeed. Indeed, our relatively large treatment effects suggest that this mechanism is likely operating in our setting at least somewhat. Thus, our findings should not be construed as the causal effect of activists' open letters on activist campaign outcomes. Instead, our empirical focus is on the circumstances in which it is optimal for activists to release their open letters, given the costs of influencing a target and its investors by other means. Nonetheless, this analysis is still important because if we discovered negative or no treatment effects in Table 4, this may

suggest that activists release open letters primarily to manipulate a target's stock price or to achieve some other goal. Our evidence does not support this argument.

4.5   Manager Reaction to Activists' Open Letters

We next examine H4 by testing managers' disclosure response to activists' open letters, focusing specifically on managers' 8-K and DEFA14A filings. We count 8-K filings in the [0, +90 days] post period and subtract from this value the count of 8-K filings in the control pre period of [−365, −275 days], where day 0 is the release date of an activist's open letter. This control period represents the [0, +90 days] period from the prior year, which helps to ensure that our results are not driven by calendar-time patterns in 8-K filings. This procedure yields the Δ 8-K Filings$_i$ dependent variable in Table 5, Column 1.

As in Sections 4.2 and 4.3, we standardize the independent variables, which simplifies the interpretation of the intercept term. We again recognize that our dependent variables are differenced, whereas some of our independent variables are in their level forms. This approach enables us to analyze static cross-sectional effects such as firm size, ROA, institutional ownership, and cash holdings—measures that are not as amenable to differencing over our short windows.

Table 5, Column 1 shows that 8-K filings increase by about 1.404 from the pre to the post period on average (1% level).[21] This finding suggests that managers respond to activists' open letters by releasing additional 8-Ks. Moreover, this finding is more pronounced for targets with lower ROA, which suggests that these targets are more sensitive to activists' open letters. This is consistent with Brav et al. (2008), who find that activists target low ROA firms more frequently. This finding is also more pronounced for targets with high institutional ownership. This is consistent with Appel et al. (2016), who argue that institutional investors may serve as important partners to activists, thus increasing the pressure on managers to

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[21]Most press releases are included in voluntary 8-K items 2, 7, 8, and 9. As a result, we limit our analysis to these 8-Ks. However, we find virtually identical results when we include all 8-Ks. We discuss this point in more detail in Section 3 and fn. 13.

respond to an activist.

In Table 5, Column 2, we re-run the regression from Column 1 except that we use $[-90,$ -1 day] as the control period for 8-K filings. We find that 8-K filings increase by about 1 in the post period relative to the pre period (1% level), which is still economically meaningful but lower in magnitude than the result in Column 1. This finding suggests that any calendar-time patterns in 8-K filings are not driving our results. As in Column 1, this finding is also more pronounced for firms with low ROA, attesting to the robustness of this result. Overall, our findings for 8-Ks suggest that managers are responding to activists' open letters with disclosure of their own.[22]

We next analyze our second managerial disclosure measure, DEFA14A filings. DEFA14A filings are voluntary amendments to the DEF 14A that managers can use to disclose any additional information that is relevant to the annual proxy materials, including managers' views on activists.[23] Some investors can also file DEFA14As, but because our focus is managers' response, we do not include these in our analysis.

DEFA14A filings follow a calendar-time pattern based on the date when firms release their proxy materials, which is typically stable from year to year. As a result, we compute the count of DEFA14A filings in the $[0, +90$ days] post period and subtract from this value the count of DEFA14A filings in the control pre period of $[-365, -275$ days], where day 0 is the activists' open letter date. We find that DEFA14A filings increase by about 3.485 from the pre to the post period (1% level). This finding suggests that managers respond to activists' open letters by increasing their frequency of DEFA14A filings.

Among the control variables, this finding is more pronounced for larger firms, who tend to disclose more regardless and who might have more experienced investor relations staff (Anilowski et al., 2007; Bushee and Miller, 2012, p. 45). Capital expenditures are negatively associated with managers' disclosure response perhaps due to proprietary costs, although

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[22]Our focus is the information content of activists' open letters, so we do not perform market tests on managers' 8-Ks. However, prior research has established that 8-Ks are informative to investors (e.g., Balakrishnan et al., 2014; Lerman and Livnat, 2010; Schoenfeld, 2017).

[23]For an example of a firm's response to an activist's open letter in a DEFA14A filing, see fn. 10.

this effect is economically small (Bernard, 2016). Overall, our findings suggest that managers respond to activists' open letters through increased disclosure of their own, specifically through 8-K and DEFA14A filings.

Our use of 90-day windows for both 8-Ks and DEFA14As ensures that managers have enough time to respond. Indeed, Guay et al. (2016, Section 5.3) argue that changing disclosure policy can take up to 90 days because managers need to observe investors' interpretation of new information and build a response. Nonetheless, our inferences are qualitatively similar when we decrease the 90-day window to 60 and 30 days.

As we noted for spreads in Section 4.3, our approach of using changes in 8-Ks and DEFA14As is similar to using firm-fixed effects, in that it mostly eliminates any persistent firm-level factors that may be driving both types of filings (e.g., industry membership). Also, since the control pre period is temporally close to the activist open letter date, this procedure likely eliminates any macro trends in 8-Ks and DEFA14As that affect all firms. Nevertheless, we also find similar results when we include as a regressor contemporaneous changes in 8-Ks and DEFA14As averaged over all other firms in a target's SIC industry. This regressor in effect serves as a set of control firms, which suggests that we are not capturing a general pattern in disclosure that is common to firms similar to a target.

We also perform several placebo tests to ensure that our results are not spurious. For 8-Ks, we run the same test in Table 5, Column 1, except that we move back activists' open letter dates by 182 days and 365 days. We also move forward activists' open letter dates by 182 days and 547 days. For DEFA14As, we run the same test in Table 5, Column 3, except that we move back activists' open letter dates by 365 days and 730 days. We also move forward activists' open letter dates by 730 days. Note that moving the open letter date forward by 365 days does not work for either 8-Ks or DEFA14As, because then the control period would overlay the actual post period. Also, recall that DEFA14As follow an annual calendar-time pattern, so we must go back and forward in one-year increments. In any event, we do not find significant changes in either of the filings for any of these placebo

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tests, which suggests that our findings in Table 5 are being driven by activists' open letters. This increases our confidence that managers are responding to activists' open letters through increased disclosure of their own, thereby creating a public debate about their firm's future.

5 Conclusion

Voluntary disclosure is a key driver of many stock price properties and investor activities (e.g., Verrecchia, 2001). Verrecchia (1983) predicts that managers' voluntary disclosures are typically induced by compensation contracts based on outcomes such as stock price. Empirical research has therefore linked voluntary disclosure to managerial stock compensation (e.g., Nagar et al., 2003). However, Jung and Kwon (1988) predict that managers' voluntary disclosures can also be induced by the informative disclosures of third parties. Relatedly, Beyer et al. (2010, Section 1) and Verrecchia (2001) suggest that the management disclosure literature can be extended to the economic consequences of the disclosures of other parties.

We therefore empirically assess corporate governance theories that model activist shareholders as investors who may use public disclosure to mitigate information asymmetry among investors about their agenda (e.g., Cohn and Rajan, 2013; Harris and Raviv, 2010). We find that activists' open letters are associated with significant stock price movements, decreased bid-ask spreads, and key activism outcomes such as proxy contests, directorships, and proxy advisor recommendations. Managers respond to activists' open letters through increased voluntary disclosure of their own. Overall, our collective evidence suggests that activists use open letters to decrease information asymmetry among investors.

There are several avenues for future research on this subject. Disclosure studies often analyze either an economic agent's decision to disclose or the economic consequences of disclosure. We follow the management disclosure literature and first test for key economic consequences of activists' disclosures (e.g., Waymire, 1984). Given our findings, future research could further analyze activists' disclosure strategies. Our matched-sample analysis

is an initial step in this direction. Our study also focuses on activist shareholders in public companies, but one could conceivably extend our study to other market participants and asset classes, and to how managers respond. Future research could also examine other mechanisms by which shareholders communicate (e.g., Doidge et al., 2017).

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Appendix 1: Illustrations of Activist Open Letters from 2012 to 2014

This appendix showcases excerpts from 10 activist open letters randomly selected from our sample. A letter's release date follows each excerpt, and the activist's name appears in parentheses.

1. "AN OPEN LETTER TO AGRIUM SHAREHOLDERS: Why We Said No to the Status Quo at Agrium, and Why You Should Too...Dear Fellow Agrium Inc. Shareholder, We have invested more than $1 billion in Agrium, making us the largest shareholder with approximately 6.5% of its outstanding shares, because we believe Agrium can generate substantial additional upside for all shareholders by addressing 5 core issues: Costs, Controls, Capital Allocation, Conglomerate Structure and Corporate Governance....Agrium has sought to turn traditional notions of board oversight of management upside down by making any questioning of management's prior performance or strategy a disqualification for board service....We further note that Agrium did not cast a very wide net to locate new board appointee Mayo Schmidt, given that Viterra's distribution business was acquired by Agrium in a transaction in which he earned over C$30MM. We also note that our board nominees stand to benefit only to the extent that all shareholders benefit and each meets the definition of 'Independence' under the CBCA, NYSE rules, and Agrium's own governance guidelines....Neither of Agrium's chosen new directors addresses the board's lack of distribution experience, which is of crucial importance given the size of Agrium's Retail business." February 20, 2013 (JANA Partners)

2. "To the Board of Directors of Allergan: In my 21-year history as a governance investor, I cannot think of another example in our portfolio where a board has behaved as poorly as you have in your response to the Valeant merger proposal. Your scorched earth response to Valeant is beyond the pale. You have accused Valeant of fraudulent accounting and of falsifying its reported growth rates and business performance, and you have done so without factual evidence to prove these assertions. If one spreads false and misleading information for the purpose of driving down Valeant's stock price, that is market manipulation, plain and simple. That a board of a $50 billion market cap company would engage in such behavior as a defensive tactic is extraordinary and incredibly inappropriate....We would have expected more from you based on your personal career track records up until this time, and what we have heard about some of you from individuals we know in common. I had hoped that your initial approach to this transaction was an ill-advised negotiating strategy, but the passage of time and your continued misinformation campaign about Valeant have caused us to conclude that you are no longer fit to serve the interests of shareholders. As a result, we have recruited a group of extremely talented executives and experienced public company directors who understand their fiduciary duties and have a track record of acting in the best interest of shareholders and the companies they have managed as CEOs and as members of their boards of directors." July 16, 2014 (Pershing Square Capital Management, LP)

3. "The following has occurred: shareholders have been told that Mr. Thompson's errors were 'Inadvertent', Mr. Thompson made a classic 'I'm sorry you feel that way' non-apology without actually accepting responsibility, Ms. Hart announced she will not seek re-election to the Board presumably due to her leadership of the botched CEO hiring process but intends to serve out her term, and the Board has formed a special committee to conduct a 'Thorough review' into Mr. Thompson's academic credentials....Mr. Thompson's 'Apology' was clearly insufficient and it seems that the only thing he actually regrets is that he has been caught in a lie and publicly exposed. After six days, we must ask - what is this Board waiting for? It seems farcical to us that the Board will most likely spend more time deliberating over whether Mr. Thompson should be fired than it did properly vetting whether he should have been hired....The necessary investigation into whether certain senior executives and Board Members knew of Mr. Thompson's deceptions before hiring him should not delay decisive action over his ethical breaches....We once again call upon the Board to immediately place Third Point's entire slate on the Board replacing Mr. Thompson and Ms. Hart, appoint an interim CEO-we would suggest CFO Tim Morse or Head of Global Media Ross Levinsohn and allow Third Point nominee Michael Wolf to Chair the Search Committee for a new permanent CEO. This is the only way for Yahoo! to move past this embarrassing episode." May 9, 2012 (Third Point LLC)

4. "We are writing to express our view that the board of directors of the Company and the Company's management have, in recent years, done a terrible job managing the Company's operations and allocating shareholder capital....The Company only discloses operating ratios by LTL and supply chain operations segments and does not break out results for Canadian and US LTL. On the Company's Q3 2011 conference call, Rick Gaetz, President and CEO, stated that Vitran's 'Canadian LTL operation operated in the lower 90s and our US LTL operation operated in the low to mid 100s.' GRAPHIC Management always has an excuse to justify this poor performance....New directors can add a new perspective on the Company, the industry and how to deal with Company's problems while looking at the Company in a more dispassionate manner....As you can see, there is tremendous opportunity at Vitran to unlock the Company's true value and put the Company on sounder financial footing." October 8, 2012 (Clark Investments)

5. "We believe the Board should immediately appoint three new directors we have identified, who are committed to working with the Board to rigorously re-examine the current capital allocation and R&D strategy, aggressively focus on maximizing profitability, and engage a reputable investment bank to explore strategic alternatives....THE XYRATEX BOARD OWES THE COMPANY'S SHAREHOLDERS A FAIR AND THOROUGH REVIEW OF THE STRATEGIC ALTERNATIVES AVAILABLE TO THE COMPANY. Fortunately, despite the actions of the management team and the Board that have damaged value and eroded confidence in Xyratex, we continue to believe that, given the very large disconnect between the market value of Xyratex stock and our conservative estimate of the Company's intrinsic value, opportunities exist within the control of the Board to unlock significant shareholder value....IMMEDIATE SHAREHOLDER REPRESENTATION IS NEEDED ON THE BOARD TO PROTECT AND MAXIMIZE VALUE FOR ALL SHAREHOLDERS. Furthermore, as we have steadily examined the Company's recent actions and past practices, we have grown increasingly disturbed by deficient corporate governance, which has drained value from shareholders and completely misaligned Board and shareholder interests." January 14, 2012 (Baker Street Capital Management, LLC)

Appendix 1: Illustrations of Activist Open Letters from 2012 to 2014 (continued)

6. "CHANGE IS NEEDED AT WALTER ENERGY...Importantly, Audley Capital believes there is substantial value in Walter Energy that is not reflected by the current share price. Walter Energy has high-quality metallurgical coal assets in established mining jurisdictions with scope for significant growth, with a market position that should enable it to generate substantial free cash flow going forward....Despite Audley Capital's confidence in the value of the metallurgical coal assets, we have been dismayed by the way the business has been run in recent years and the loss of stockholder value. For example, the share price has underperformed major mining indices, with the share price of Walter Energy falling 79% since its peak in April 2011 vs. only a 38% fall in the MSCI World Metals and Mining Index in the same period. This share price weakness as compared to the met coal average price decline reflects the uninspiring management of the Company....In that vein, we firmly believe that a reconstituted Board—including Audley Capital's director nominees—would be best placed to execute on these value-enhancing steps. Audley Capital's director nominees include individuals with extensive experience in the metallurgical coal industry on an international basis and possess the skills required to manage multi-jurisdictional coal operations and their financing. We believe that they will bring a fresh, dynamic and creative approach to the Walter Energy Board....We think that change is long overdue, and are disturbed that despite the loss of stockholder value, we see the Board taking no accountability for questionable strategic, operational and financial decisions. Further, the lack of consistent executive leadership is an underlying signal of lack of stability where it matters most." March 25, 2013 (Audley Capital Advisors LLP)

7. "Unfortunately, SVVC's shareholders have to deal with reality and the reality is not pretty. SVVC's NAV was down 4.2% in 2012 while the S&P 500 Index gained 16% and the discount ended the year at 23.8%....It is difficult to understand how a diligent board of directors can justify the fees Kevin and his team have reaped for what is indisputably poor performance. Check out Kevin's reaction to the big losses SVVC incurred on Facebook when he was asked about it on CNBC. See `http://video.cnbc.com/gallery/?video=3000110102&play=1`. He seems pretty sanguine about losing millions of dollars. Another instance of horrible timing was his investment in SolarCity....SVVC has a multitude of problems: a portfolio manager who is not very good and is excessively compensated, a weak board, poor NAV performance, and a persistently wide discount. However, we think SVVC's biggest problem is a flawed investment thesis....How to Maximize SVVC's Shareholder Value: Both the pre-conversion shareholders and those that bought in the secondary offering are way under water. A number of shareholders have urged us to lead a campaign to enhance shareholder value. Therefore, at the earliest opportunity, we intend to (1) elect directors who are committed to managing the discount and providing a liquidity event, and (2) replace Kevin's firm with one that is less 'visionary' but that has a track record of making money for investors." April 10, 2013 (Bulldog Investors)

8. "It is our belief that it is the responsibility of the Board, on behalf of the company's shareholders, to take advantage of such a large and unmistakable opportunity. Indeed, we believe that by choosing not to increase the size of the repurchase program, the directors are actually performing a great disservice to the owners, especially smaller shareholders who may not be in a position to buy more stock themselves....In this letter, we have above summarized why we believe Apple is undervalued in order to express how ridiculous it seems to us for Apple to horde so much cash rather than repurchase stock (and thereby use that cash to make a larger investment in itself for the benefit of all of the company's shareholders)....We have expressed above what we believe to be the company's primary reason for not supporting our proposal. Conversely, it is our belief that Apple's current excess liquidity is without historical precedent and beyond reasonable comparison to its peers or otherwise, and such dramatic overcapitalization affords the company enough excess liquidity to repurchase the amount of shares we proposed. Apple's existing capital return program has just $37 billion remaining, and the company has until the end of 2015 to complete it. Without any changes to the program, the largest pile of corporate cash in the world is likely to grow even larger, and if the share price rises, this Board will have missed a great opportunity to use more of that hoarded cash to repurchase shares at an attractive value." January 23, 2014 (Icahn Enterprises L.P.)

9. "We have chosen to take this opportunity to express our dissatisfaction with certain Board and management policies that we find detrimental to shareholder value. Such policies include the Company's: a) lack of an investor communication program; b) weak corporate governance; and c) overcapitalized balance sheet. We believe that these factors have had a deleterious impact on shareholder returns over a multi-year period. Furthermore, it is the responsibility of MicroStrategy's Board of Directors to pursue business and governance objectives that are in the best interest of all stakeholders (not just those that support the welfare of its Founder, Chairman and CEO). In our view, the Board has acted in a way that fails to meet a reasonable standard of fiduciary behavior....Furthermore, this policy of blatant non-communication has directly resulted in the Company's current pariah status on Wall Street—with only 4 sell-side analysts covering the stock (3 long time MicroStrategy analysts recently dropped coverage). It is our opinion that the majority of institutional investors who take their fiduciary responsibilities seriously are reluctant or unwilling to consider an investment in a company that refuses to communicate with its shareholders." January 28, 2014 (Apex Capital, LLC)

10. "Dear Independent Members of the Board of Directors of Aaron's, Inc.: You will soon have to make one of the most important decisions in Aaron's history. In the coming weeks, we believe that Aaron's management will seek your approval for an alternative transaction that is very different from the open and transparent strategic review process that we and other shareholders have advocated. This transaction may be a share repurchase, an acquisition or something else; the precise contours are not important. What is important is that we believe that management's latest self-entrenching scheme will be nothing more than short-term financial engineering to temporarily increase earnings per share and mask the ongoing declines in system-wide profitability. If approved, this financial engineering will substantially increase the execution risk to Aaron's shareholders without any improvement to the company's core business. We hope that you will strongly question the logic of adding risk to Aaron's at a time when its core business is already badly weakened by over two years of failed strategies and empty promises....We are confident that when you look at the facts and ask the hard questions, Ron's latest plan—like all of his prior plans—will not be the right direction for Aaron's." March 14, 2014 (Vintage Capital Management LLC)

Appendix 2: Variable Definitions for Activist Open Letters from 2012 to 2014

Index i represents each activist open letter in our sample; index f represents a target firm; index a represents the activist; index d represents the event day; index q represents the event year-quarter; index r represents raw firm returns; index v represents value-weighted market returns; and index n represents the number of trading days in the corresponding measurement window. Index $d = 0$ and $q = 0$ are the activist open letter date and year-quarter of that date, respectively. See Sections 3 and 4 for more detail on all the variables.

Variable	Definition	Source
Target-Firm Attributes		
Abnormal Returns$_i$	$\left[\exp\left[\sum\limits_{d=0,-1,-5}^{d=0,1,5} \ln(1+r_{fd})\right]-1\right] - \left[\exp\left[\sum\limits_{d=0,-1,-5}^{d=0,1,5} \ln(1+r_{vd})\right]-1\right]$	CRSP
Percent Quoted Spreads$_{fd}$	$\left[100 \times \frac{Ask_{fd}-Bid_{fd}}{(Ask_{fd}+Bid_{fd})/2}\right]$, time weighted as in Holden and Jacobsen (2014)	DTAQ
Abnormal Spreads$_i$	$\sum\limits_{d=0,-1,-5}^{d=0,1,5} \frac{\text{Percent Quoted Spreads}_{fd}}{n} - \sum\limits_{d=-60}^{d=-30} \frac{\text{Percent Quoted Spreads}_{fd}}{n}$	DTAQ
Δ 8-K Filings$_i$	$\sum\limits_{d=0}^{d=90} \text{8-K Filings}_{fd} - \sum\limits_{d=-365,-90}^{d=-275,-1} \text{8-K Filings}_{fd}$ (see Section 3 for 8-K item numbers)	SEC
Δ DEFA14A Filings$_i$	$\sum\limits_{d=0}^{d=90} \text{DEFA14A Filings}_{fd} - \sum\limits_{d=-365}^{d=-275} \text{DEFA14A Filings}_{fd}$	SEC
Log of Market Value$_i$	$\text{Ln}(\text{price}_{f,d=0} \times \text{shares outstanding}_{f,d=0})$	CRSP
ROA$_i$	Net income$_{f,q=0}$/total assets$_{f,q=0}$	Compustat
CAPEX$_i$	Capital expenditures$_{f,q=0}$/total assets$_{f,q=0}$	Compustat
R&D$_i$	R&D$_{f,q=0}$/total assets$_{f,q=0}$	Compustat
Institutional Ownership$_i$	Total shares owned by institutions$_{f,q=0}$/shares outstanding$_{f,q=0}$	FactSet
Analyst Following$_i$	Analyst following$_{f,d=0}$	I/B/E/S
Cash$_i$	Cash$_{f,q=0}$/total assets$_{f,q=0}$	Compustat
Intangibles$_i$	Intangibles$_{f,q=0}$/total assets$_{f,q=0}$	Compustat
Entrenched Management$_i$	1 if the target firm's BulletProof rating is above the sample median, 0 otherwise	FactSet
Activist Attributes		
Activist Ownership$_i$	Activist ownership in the target as a percentage of common stock$_{a,d=0}$	FactSet
High Activist Assets Under Management (AUM)$_i$	1 if the activist's AUM$_{a,d=0}$ is greater than the sample median AUM, 0 otherwise	FactSet
Missing FactSet Data$_i$	1 if the activist campaign is not covered by SharkRepellent, 0 otherwise (see Section 3)	FactSet

Table 1
Panel A: Target Firm and Activist Descriptive Statistics for Activist Open Letters from 2012 to 2014
Index i represents the corresponding activist and target firm. All variables are winsorized at the two percent level except for indicator variables. Variables that have a natural lower bound of zero (e.g., analyst following) are winsorized from the top only. All of our results are qualitatively similar when we do not winsorize and when we winsorize at the 5 percent level. For entrenchment and activist AUM, our indicator variables do not equal 0.50 because of observations that do not link to SharkRepellent, for which we set these variables equal to zero (similar to Khanna et al., 2015). See Section 3 for more detail on our data. See Appendix 2 for variable definitions.

Variable	N	Mean	σ	P25	P50	P75
				All Activist Open Letters		
Abs(Day 0 CAR)$_i$	255	0.022	0.03	0.005	0.010	0.026
Abs($[-1, +1$ day$]$ CAR)$_i$	255	0.040	0.06	0.008	0.021	0.041
Abs($[-5, +5$ day$]$ CAR)$_i$	255	0.058	0.08	0.015	0.029	0.069
Day 0 CAR$_i$	255	0.013	0.03	-0.005	0.006	0.020
$[-1, +1$ day$]$ CAR$_i$	255	0.024	0.06	-0.005	0.010	0.035
$[-5, +5$ days$]$ CAR$_i$	255	0.035	0.09	-0.012	0.017	0.052
Day 0 Abn. Spread$_i$	255	-0.013	0.06	-0.016	-0.004	0.002
$[-1, +1$ day$]$ Abn. Spread$_i$	255	-0.017	0.07	-0.013	-0.003	0.003
$[-5, +5$ days$]$ Abn. Spread$_i$	255	-0.012	0.05	-0.013	-0.003	0.002
Day 0 Abn. Turnover$_i$	255	0.010	0.03	-0.002	0.001	0.008
$[-1, +1$ day$]$ Abn. Turnover$_i$	255	0.009	0.03	-0.002	0.001	0.008
$[-5, +5$ days$]$ Abn. Turnover$_i$	255	0.005	0.02	-0.002	0.001	0.006
Δ 8-K Filings$_i$	255	1.412	3.28	0.000	1.000	3.000
Δ DEFA14A Filings$_i$	255	3.486	6.26	0.000	1.000	5.000
Log of Market Value$_i$	255	21.544	2.09	19.981	21.450	22.879
ROA$_i$	255	-0.001	0.04	-0.008	0.003	0.014
CAPEX$_i$	255	0.029	0.05	0.006	0.013	0.035
R&D$_i$	255	0.008	0.02	0.000	0.000	0.007
Institutional Ownership$_i$	255	0.568	0.34	0.366	0.683	0.831
Analyst Following$_i$	255	2.028	5.33	0.000	0.000	0.000
Cash$_i$	255	0.166	0.17	0.035	0.114	0.247
Intangibles$_i$	255	0.166	0.19	0.012	0.084	0.278
Entrenched Management$_i$	255	0.416	0.49	0.000	0.000	1.000
Activist Ownership$_i$	255	0.057	0.06	0.002	0.052	0.085
High Activist AUM$_i$	255	0.404	0.49	0.000	0.000	1.000
Missing FactSet Data$_i$	255	0.208	0.41	0.000	0.000	0.000

Table 1
Panel B: Year-Quarter Distribution for Activist Open Letters from 2012 to 2014

Year-Quarter t	Activist Open Letters$_t$	$\frac{\text{Activist Open Letters}_t}{\text{N} = 255}$
2012Q1	16	6.27%
2012Q2	14	5.49%
2012Q3	13	5.10%
2012Q4	17	6.67%
2013Q1	36	14.12%
2013Q2	31	12.16%
2013Q3	21	8.24%
2013Q4	24	9.41%
2014Q1	29	11.37%
2014Q2	23	9.02%
2014Q3	15	5.88%
2014Q4	16	6.27%
Total	255	100%

Table 1
Panel C: Target Firm Industry Distribution for Activist Open Letters from 2012 to 2014

Industry i	Activist Open Letters$_i$	$\frac{\text{Activist Open Letters}_i}{\text{N} = 255}$
Consumer Nondurables	12	4.71%
Consumer Durables	7	2.75%
Manufacturing	22	8.63%
Energy, Oil, Gas, and Coal	17	6.67%
Chemicals and Allied Products	6	2.35%
Business Equipment	62	24.31%
Telecommunications	5	1.96%
Utilities	2	0.78%
Wholesale and Retail	37	14.51%
Health Care	24	9.41%
Finance	23	9.02
Other	38	14.90
Total	255	100%

Table 2
Unsigned and Signed Stock Price Response to Activist Open Letters from 2012 to 2014
This table analyzes unsigned and signed cumulative abnormal returns (CAR) of varying intervals for a target firm around the activist open letter date (day 0). The intercepts are our main statistics of interest in Section 4.2. All of the independent variables are standardized to ensure that the intercept can be interpreted without correction. Index i represents the corresponding activist and target firm. See Appendix 2 for exact variable definitions. T-statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the two-tailed 1%, 5%, and 10% level, respectively.

	Dependent Variables: Unsigned and Signed Cumulative Abnormal Returns (CAR) Around the Activist Open Letter Date					
	(1) Abs(Day 0 CAR)$_i$	(2) Abs([−1, +1 day] CAR)$_i$	(3) Abs([−5, +5 day] CAR)$_i$	(4) Day 0 CAR$_i$	(5) [−1, +1 day] CAR$_i$	(6) [−5, +5 days] CAR$_i$
Intercept	0.022***	0.040***	0.058***	0.013***	0.024***	0.035***
	(11.86)	(11.97)	(13.03)	(6.14)	(7.11)	(7.05)
Log of Market Value$_i$	-0.010***	-0.025***	-0.036***	-0.008**	-0.024***	-0.042***
	(-3.27)	(-3.56)	(-4.20)	(-2.46)	(-3.99)	(-4.70)
ROA$_i$	-0.000	0.003	0.009	-0.001	0.011*	0.020**
	(-0.17)	(0.29)	(0.87)	(-0.66)	(1.74)	(2.28)
CAPEX$_i$	0.001	0.002	-0.002	0.001	-0.001	-0.005
	(0.39)	(0.64)	(-0.43)	(0.37)	(-0.34)	(-1.16)
R&D$_i$	0.001	-0.000	-0.004	0.004*	0.009*	0.004
	(0.42)	(-0.02)	(-0.51)	(1.73)	(1.90)	(0.49)
Institutional Ownership$_i$	-0.001	-0.003	-0.005	-0.001	-0.001	-0.003
	(-0.42)	(-1.04)	(-1.06)	(-0.52)	(-0.15)	(-0.70)
Log of Analyst Following$_i$	0.001	0.005	0.008	-0.001	-0.001	0.001
	(0.57)	(1.25)	(1.51)	(-0.26)	(-0.36)	(0.21)
Cash$_i$	-0.003*	0.001	0.006	-0.005**	-0.003	0.004
	(-1.72)	(0.21)	(0.76)	(-2.20)	(-0.73)	(0.53)
Intangibles$_i$	-0.001	0.003	0.003	-0.001	-0.002	0.007
	(-0.52)	(0.87)	(0.66)	(-0.36)	(-0.61)	(1.32)
Entrenched Management$_i$	-0.001	-0.005	-0.007	0.003	-0.000	0.004
	(-0.30)	(-1.35)	(-1.35)	(1.12)	(-0.04)	(0.68)
Activist Ownership$_i$	-0.004**	-0.011***	-0.017***	-0.005**	-0.015***	-0.015***
	(-2.15)	(-3.04)	(-3.34)	(-2.11)	(-4.05)	(-2.81)
High Activist AUM$_i$	0.006**	0.013**	0.018***	0.009***	0.018***	0.028***
	(2.42)	(2.38)	(2.62)	(3.02)	(3.21)	(3.61)
Missing FactSet Data$_i$	0.007**	0.008*	0.012*	0.009***	0.010**	0.020***
	(2.51)	(1.74)	(1.87)	(2.92)	(2.20)	(2.96)
Observations	255	255	255	255	255	255
R^2	0.11	0.15	0.19	0.11	0.17	0.20

Table 3

Bid-Ask Spread Response to Activist Open Letters from 2012 to 2014

This table analyzes abnormal bid-ask spreads of varying intervals for a target firm around the activist open letter date (day 0). The control period for spreads is $[-60, -30$ days$]$. The intercepts are our main statistics of interest in Section 4.3. All of the independent variables are standardized to ensure that the intercept can be interpreted without correction. Index i represents the corresponding activist and target firm. See Appendix 2 for exact variable definitions. T-statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the two-tailed 1%, 5%, and 10% level, respectively.

	Dependent Variables: Abnormal Bid-Ask Spreads Around the Activist Open Letter Date		
	(1) Day 0 Abn. Spread$_i$	(2) $[-1, +1$ day$]$ Abn. Spread$_i$	(3) $[-5, +5$ days$]$ Abn. Spread$_i$
Intercept	-0.013***	-0.017***	-0.012***
	(-3.36)	(-4.21)	(-3.64)
Log of Market Value$_i$	0.015**	0.019***	0.013**
	(2.09)	(2.61)	(2.08)
ROA$_i$	-0.001	-0.006	0.000
	(-0.19)	(-0.99)	(0.05)
CAPEX$_i$	0.004	0.003	0.002
	(1.46)	(0.94)	(0.86)
R&D$_i$	0.009	0.004	0.007
	(1.15)	(0.60)	(1.08)
Institutional Ownership$_i$	0.003	0.005	0.003
	(0.78)	(1.33)	(1.18)
Log of Analyst Following$_i$	-0.003	-0.005	-0.004
	(-0.73)	(-1.03)	(-1.18)
Cash$_i$	-0.007	-0.005	-0.001
	(-1.11)	(-0.93)	(-0.24)
Intangibles$_i$	-0.001	0.002	-0.004
	(-0.14)	(0.60)	(-1.14)
Entrenched Management$_i$	0.000	0.003	0.003
	(0.02)	(0.59)	(0.84)
Activist Ownership$_i$	-0.003	-0.013	-0.004
	(-0.45)	(-1.52)	(-0.84)
High Activist AUM$_i$	-0.004	-0.002	-0.001
	(-0.69)	(-0.42)	(-0.22)
Missing FactSet Data$_i$	-0.011**	-0.015***	-0.007
	(-2.02)	(-2.62)	(-1.50)
Day 0 Abn. Turnover$_i$	0.001		
	(0.20)		
$[-1, +1$ day$]$ Abn. Turnover$_i$		0.005**	
		(1.98)	
$[-5, +5$ days$]$ Abn. Turnover$_i$			0.001
			(0.75)
Observations	255	255	255
R^2	0.08	0.15	0.09

Table 4

Activist Open Letters and Activism Success from 2012 to 2014

This table analyzes the association between activist open letters and several measures of activism success at the target firms. ISS stands for Institutional Shareholder Services. For 203 of our 255 observations, we can link activist open letters to a FactSet database that contains details on the outcome of that specific activist campaign. We match these 203 observations to 203 similar activist campaigns in FactSet that did not have an activist open letter; we then compare the outcomes across the two samples. The sample without activist open letters represents our control sample; the sample with activist open letters represents our treatment sample. The "Governance or Strategic Demands" outcome represents any governance or corporate operating decision that traces to an activist's agenda. We describe our matching procedure and the activism outcomes in more detail in Section 4.4. The treatment effect in this table is not necessarily causal; see Section 4.4 for the caveats to this analysis. ***, **, and * indicate statistical significance at the two-tailed 1%, 5%, and 10% level, respectively.

Activism Outcome	Control Sample (N = 203)	Treatment Sample (N = 203)	Activist Open Letter Treatment Effect
Activist Wins Proxy Contest at Target	5.64%	31.03%	+25.39%***
Activist Attains Directorship at Target	22.75%	33.99%	+11.24%*
Activist Achieves Governance or Strategic Demands at Target	35.45%	69.95%	+35.50%***
Activist Receives ISS or Glass Lewis Recommendation at Target	5.64%	31.03%	+25.39%***
Special Shareholder Meeting Called by Target's Board	3.00%	10.84%	+7.84%*

Table 5

Managerial Response to Activist Open Letters from 2012 to 2014

This table analyzes changes in 8-K and DEFA14A disclosures for a target firm around the activist open letter date (day 0). Δ 8-K Filings$_i$ in Column 1 represents total 8-K filings from $[0, +90$ days$]$ minus total 8-K filings from $[-365, -275$ days$]$. The latter period represents the same measurement window as the former period but in the year prior. Δ 8-K Filings$_i$ in Column 2 represents total 8-K filings from $[0, +90$ days$]$ minus total 8-K filings from $[-90, -1$ day$]$. Since DEFA14As follow calendar-time patterns, Δ DEFA14A Filings$_i$ in Column 3 represents total DEFA14A filings from $[0, +90$ days$]$ minus total 8-K filings from $[-365, -275$ days$]$. The intercepts are our main statistics of interest in Section 4.5. All of the independent variables are standardized to ensure that the intercept can be interpreted without correction. Index i represents the corresponding activist and target firm. See Appendix 2 for exact variable definitions. T-statistics are in parentheses and standard errors are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the two-tailed 1%, 5%, and 10% level, respectively.

	Dependent Variables: Disclosure Changes Around the Activist Open Letter Date		
	(1) Δ 8-K Filings$_i$	(2) Δ 8-K Filings$_i$	(3) Δ DEFA14A Filings$_i$
Intercept	1.404***	0.983***	3.485***
	(6.91)	(6.09)	(9.19)
Log of Market Value$_i$	0.210	-0.153	1.225***
	(0.76)	(-0.69)	(2.66)
ROA$_i$	-0.445**	-0.526***	-0.384
	(-2.10)	(-3.31)	(-0.69)
CAPEX$_i$	0.111	-0.136	-0.595**
	(0.54)	(-0.93)	(-2.34)
R&D$_i$	-0.295	-0.075	-0.173
	(-1.28)	(-0.42)	(-0.50)
Institutional Ownership$_i$	0.668***	0.229	0.445
	(3.09)	(1.32)	(1.11)
Log of Analyst Following$_i$	-0.146	0.044	-0.423
	(-0.54)	(0.24)	(-1.47)
Cash$_i$	-0.140	-0.426**	-0.609
	(-0.63)	(-2.46)	(-1.43)
Intangibles$_i$	-0.173	-0.088	-0.127
	(-0.77)	(-0.49)	(-0.34)
Entrenched Management$_i$	-0.345	-0.291	-0.186
	(-1.36)	(-1.39)	(-0.42)
Activist Ownership$_i$	-0.033	-0.418**	-0.431
	(-0.12)	(-2.23)	(-1.06)
High Activist AUM$_i$	0.193	0.342	-0.177
	(0.64)	(1.48)	(-0.38)
Missing FactSet Data$_i$	-0.119	-0.447**	-1.492***
	(-0.45)	(-2.12)	(-3.11)
Observations	255	255	255
R^2	0.07	0.08	0.11