Activist Fraud Campaign Disclosures: Private Information Revelation or Market Manipulation?

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Abstract

While activist short sellers play a key role in exposing corporate frauds, they have recently come under harsh legal and regulatory scrutiny following accusations of systematically disseminating false negative information. We develop a framework that considers fundamental tradeoffs between the benefits of public disclosure and the substantial risks an activist faces when disclosing fraud allegations under their own names. We hypothesize and find that joint observation of an activist's fraud campaign disclosure and the degree of pre-disclosure shorting intensity is informative about the trajectory of a target's post-disclosure stock returns, the ensuing flow of negative business press, and a range of key outcomes that are widely tracked by the short-selling community as significant campaign developments, including auditor turnover, class-action lawsuits, and performance-related delistings. We also examine V-shaped reversals following activists' disclosures and find no evidence of systematic manipulation. Consistent with our framework, we conclude that activist short sellers disclosing fraud allegations under their own names are discouraged from engaging in short-and-distort schemes.

Keywords: Activist Short Sellers, Fraud Detection, Disclosure, Stock Lending Market.

JEL Codes: G12, G14, G23, M41.

1. Introduction

A study by Dyck et al. (2023) provides evidence that corporate fraud represents a significant component of the agency costs of public ownership. The study estimates that on average 10% of large publicly traded firms are committing securities fraud every year, and provides evidence suggesting that only one-third of corporate frauds are detected. This underscores the important role that robust fraud detection activities can play in mitigating such agency costs. Among capital market gatekeepers, including auditors, financial analysts, regulators, and the business press, there is evidence that short sellers are skilled in detecting fraud before its public revelation (e.g., Karpoff and Lou 2010; Fang et al. 2016). In recent years, activist short sellers who publicly disclose fraud allegations under their own names have played a key role in exposing major cases of corporate fraud, such as Nikola Corp., Luckin Coffee Inc., and Wirecard AG.

Despite this record of success in fraud detection, activist short sellers have recently come under harsh scrutiny. Spearheading this criticism, Mitts (2020) contends that activist short sellers systematically engage in "short-and-distort" schemes by publicly disclosing false or misleading negative reports.[1] Building on this research, critics of activist short selling have petitioned the SEC to impose significant disclosure requirements and trading restrictions on short sellers who publicly disclose negative information about a target firm (Coffee et al. 2020). In 2022, the SEC proposed new rules to enhance the transparency of short selling and deter abusive short selling campaigns. Further, the Fraud Section of the U.S. Department of Justice recently launched a broad investigation into potential market manipulation and other trading abuses by activist short sellers, issuing search warrants and subpoenas to a number of prominent activist short sellers.

Countering these attacks, prominent activist short sellers argue that the research underpinning these recent attacks is flawed and that the fraud detection activity of activists is an important mechanism for private information revelation (Block 2022). The common concern expressed among proponents of short activism is that proposed rule changes and elevated legal exposure will eviscerate activist short sellers' incentives to pursue risky investments in fraud discovery and undermine the valuable policing services they supply to capital markets.

Do activist short sellers facilitate price discovery by uncovering corporate fraud or do they systematically manipulate the market by maliciously making false statements of material facts? We contribute to this debate by explicitly examining the role of private information in shaping the disclosure incentives of activist short sellers. We develop a

[1] In a short-and-distort scheme, the activist first shorts a stock then engages in a campaign to aggressively spread unverified bad news about the stock with the objective of panicking other investors into selling their stock to drive the price down. They then rapidly close their short position for a profit before the stock price has a chance to rebound partially or fully.

conceptual framework that focuses on the fundamental tradeoffs between the benefits of public disclosure and the substantial risks short sellers face when disclosing fraud allegations under their own names. In our framework, the act of disclosure together with pre-disclosure stock lending market activity reveals the precision and severity of the private information underlying short sellers' allegations against target firms. We provide robust empirical evidence confirming key implications of our disclosure framework.

The incentives of short sellers to invest in fraud detection depend on their ability to take large positions based on their private information and then realize profits after disclosing fraud allegations. Fraud detection is difficult and generally requires significant investments in deep-dive investigative research. Absent disclosure, short sellers may have to maintain risky short positions for an extended period before the market independently discovers the fraud. Disclosure mitigates this delay by revealing their private information and initiating price discovery (Ljungqvist and Qian 2016). However, the act of disclosing fraud allegations under their own name exposes activist short sellers to significant risks of retaliation. This includes the risks of litigation, personal attacks and regulatory scrutiny, all of which generally increase in the severity of the activist's allegations (Lamont 2012).

Because activists have the option of short selling without disclosing, a decision to disclose implies that assessed benefits outweigh disclosure costs. Our framework conceptualizes the activist short seller's disclosure decision as a threshold strategy. The disclosure threshold is an increasing function of the risk of retaliation, as well as other shorting costs and risks that include explicit stock loan fees and risks associated with the volatility of stock loan fees, stock loan recalls, and predatory trading due to short squeezes (D'Avolio 2002; Lamont 2012; Engleberg et al. 2018). A key implication is that observing a disclosure implies that the activist has conviction that the expected value of their private overpricing signal exceeds the disclosure threshold. Further, the higher the disclosure threshold, the stronger the short seller's private overpricing signal must be to justify disclosure.

There are two key challenges in moving from theory to data. First, short sellers' private overpricing signals are unobservable. Second, the disclosure threshold is also largely unobservable due to inherent limitations in quantifying the overall cost implications of retaliation and shorting risks facing a disclosing activist. To overcome these challenges, we consider the observable quantity of shares sold short in the pre-disclosure period, and expand our disclosure framework to incorporate a short seller's *quantity* choice. We show that the optimal choice of quantity shorted is increasing in the strength of the short seller's private overpricing signal. Conditional on disclosure, greater magnitudes of pre-disclosure short selling are associated with a higher disclosure threshold.

Based on these results, we hypothesize that *joint* observation of an activist's fraud campaign disclosure and the degree of pre-disclosure shorting intensity is informative about

the negative trajectory of a target's post-disclosure stock returns, the ensuing flow of negative business press coverage, and a range of negative corporate outcomes. Further, we hypothesize that the sensitivity of post-disclosure negative outcomes to pre-disclosure shorting intensity will increase in shorting costs and risks associated with higher disclosure thresholds.

To test our hypotheses, we obtain information about activist short campaigns from Activist Insight Shorts (AiS), a subscription-based platform that provides actionable real-time feeds regarding new activist short campaign disclosures and their subsequent developments. The AiS dataset includes information about the short seller's identity, the target company's identity, the campaign disclosure date, and the primary allegation. Our focus is on activist short campaigns that accuse corporations of engaging in various forms of corporate misconduct, such as accounting fraud, major business fraud, deceptive accounting practices, pyramid schemes, fraudulent stock promotion schemes, and other illegal activities. To examine stock lending market dynamics, we use daily data available from IHS Markit on the quantity of stock on loan, the supply of lendable shares, utilization rates, stock loan fees and rebate rates

We begin by providing a granular analysis of the stock lending market dynamics surrounding an activist's public disclosure of fraud allegations. Our evidence reveals significant variation in the degree of pre-disclosure shorting intensity and lendable quantity utilization across activist fraud campaigns. To capture heterogeneity across campaigns, we split the AiS sample into three groups based on the pre-disclosure change in quantity on loan over the quarter leading up to the campaign disclosure day. Consistent with our hypothesis, we document that higher pre-disclosure shorting intensity is associated with more severe post-disclosure returns.

Across activist fraud campaigns the average three-day disclosure return is -8%. Importantly, splitting campaigns based on pre-disclosure shorting intensity yields a clean separation of post-disclosure returns across alternative event windows. The immediate market reaction is significantly stronger in response to the disclosure of activist fraud campaigns with higher pre-disclosure shorting intensity. The difference in the stock return performance between high and low intensity campaigns is -7% in the three-day disclosure window, with returns of -4.3%, -8.4%, and -11.3% for low, medium, and high groups, respectively. Expanding the return window, we find that the spread in the stock return performance between high and low intensity campaigns is -16% one-quarter out and -25% one-year-out. The link between pre-disclosure shorting intensity and post-disclosure stock return performance is robust to controlling for a wide array of target company characteristics as well as indicators related to the prior track record and credibility of the disclosing activist short seller.

In the context of our framework, higher pre-disclosure shorting intensity in combination with elevated short-selling risk implies a higher disclosure threshold and, thus, a greater assessed value of the private signal is necessary to justify disclosure on the part of the activist short seller. Accordingly, we predict that elevated short-selling risk will magnify the impact of aggressive pre-disclosure shorting intensity on post-disclosure underperformance. To test this prediction, we condition our analysis on explicit shorting fees and key determinants of shorting risk. These determinants include the variability of stock loan fees (D'Avolio 2002; Engelberg et al. 2018), price momentum (Shleifer and Vishny 1997), idiosyncratic risk (Pontiff 2006), and squeeze risk, which represents the vulnerability of short sellers to predatory trading (e.g., Lamont 2012). Consistent with our framework, the evidence shows that the link between pre-disclosure shorting intensity and post-disclosure stock returns is amplified when short sellers are going "against the grain" in spite of higher and more volatile stock loan fees, rising stock prices, higher idiosyncratic stock return volatility, and elevated short squeeze risk.

The public disclosure of fraud allegations will generally initiate a process whereby market participants seek out additional information to assess the economic and legal implications of the fraud allegations for target firms. We predict that this information discovery process will intensify with pre-disclosure short selling intensity. We find that the post-disclosure flow of negative business press coverage is significantly increasing in the intensity of pre-publication short selling. Given our earlier evidence that higher pre-disclosure shorting intensity is associated with more persistent post-disclosure price drops, the media coverage dynamics suggest that more consequential fraud allegations initiate a more intensive flow of negative news stories over time that is impounded into stock prices. This result is consistent with the business press playing an important role in the price discovery process whereby the market gradually discovers the full pricing implications of information contained in activists' fraud disclosures.

We also examine relations between pre-publication shorting increases and negative corporate outcomes that are widely tracked by the short-selling community as significant campaign developments. We find that the probability of auditor turnover, class-action lawsuits and performance-related delistings all significantly increase with the degree of pre-disclosure short selling intensity. Reinforcing our earlier results, this evidence shows that pre-disclosure short selling activity embeds material information for anticipating long-term negative corporate outcomes beyond immediate announcement price drops and ensuing stock-drop lawsuits. Overall, we provide robust evidence that greater pre-disclosure shorting intensity is associated with more severe permanent price drops, more sustained flows of negative business press coverage, as well as higher probabilities of auditor turnover, class-action lawsuits, and performance-related delistings.

While our conceptual framework and evidence underscores the role of activist short selling as an important mechanism for private information revelation, it does not preclude the possibility of manipulative short-and-distort schemes. We consider this possibility and search for the markings of manipulative short selling in stock prices and the quantity of stock on loan. Mitts (2020) argues that short-and-distort schemes lead to "V-shaped" stock price patterns whereby stock price drops in the three-day window centered on the disclosure day are followed by sharp reversals during the second to fifth day following the disclosure. Following Mitts (2020), we isolate campaigns with both negative three-day disclosure returns and positive returns during the second to fifth day following the campaign disclosure. A third of activist fraud campaigns exhibit a partial or full V-shaped reversal in the five-day disclosure window. However, extending the return window reveals that V-shaped reversals are transient, where long-term performance does not systematically differ for campaigns with or without a V-shaped reversal. Further, for campaigns with V-shaped reversals, we find no evidence that activists engage in manipulative short selling by quickly covering short positions after disclosure in order to front run the partial or full rebound of stock prices. Overall, our evidence is consistent with significant retaliation risks and other shorting costs and risks discouraging activist short sellers that disclose fraud allegations under their own names from engaging in short-and-distort schemes.

Our conceptual framework and empirical evidence contributes to the voluntary disclosure literature and to the ongoing debate on the role of short activism by explicitly delineating the incentives of short sellers to pursue fraud discovery and then disclose fraud allegations under their own names. Importantly, we find no evidence that activist short sellers disclosing under their own names engage in short-and-distort schemes. This is consistent with significant retaliation and shorting risks discouraging activists who disclose under their own names from engaging in short-and-distort schemes. Given the key role played by fraud detection in mitigating the agency costs of public ownership, our analysis suggests that regulators should employ caution before imposing onerous regulations that constrain activists' ability to profit from their private information, as this may dampen their *ex ante* incentives to invest in fraud detection in the first place.

In addition, a practical implication of our analysis follows from our evidence that the negative consequences of fraud allegations disclosed by activist short sellers differs dramatically across campaigns. This is important as the private information uncovered by an activist is idiosyncratic to a specific campaign and the quality of overpricing signals can vary across different campaigns initiated by the same activist, regardless of their prior record of success. Our results suggest that capital market gatekeepers and investors can assess the negative implications of fraud allegations disclosed by activist short sellers by incorporating pre-disclosure shorting intensity in their assessment process. The disclosure

of a heavily shorted activist fraud campaign may indeed provide a more precise indicator of corporate misconduct than statistical prediction models.

Section 2 provides the background and introduces a conceptual framework of activist short disclosures. Section 3 develops our research design and probes the stock lending market dynamics surrounding activist fraud disclosures. Section 4 provides evidence on the association between pre-disclosure shorting and post-disclosure campaign outcomes. Section 5 concludes.

2. Background and Conceptual Framework

2.1 Corporate fraud and activist short selling

Corporate fraud is a significant agency cost of public stock ownership (e.g., Karpoff and Lott 1993; Karpoff et al. 2008; Dyck et al. 2010). Failure to detect fraud exposes shareholders to significant losses, undermines investor trust in capital markets and, at the aggregate level, compromises the efficient allocation of capital in society. Corporate fraud is notoriously hard to detect. Revealed cases may only constitute the tip of the iceberg where undetected cases may account for the majority of corporate fraud. Dyck et al. (2023) estimate that detection occurs in only one third of corporate frauds and that around 10% of listed firms are committing securities fraud in an average year. The lessons from the unraveling of major corporate scandals underscore the challenges for capital market gatekeepers, including analysts, journalists, regulators, and litigators, in detecting fraud through traditional governance mechanisms such as internal controls and external auditing (e.g., Coffee 2006; Miller 2006; Dyck et al. 2010).

Numerous studies have explored the performance of statistical models and financial ratios for detecting fraud. State of the art prediction models attempt to improve upon commonly used regression models, such as Dechow's et al. (2011) F-Score, applying machine-learning approaches (e.g., Cecchini et al 2010; Bao et al. 2020). The low classification precision of fraud detection models limits their practical application. False positives are particularly costly for decision makers operating under tight time and budget constraints. For example, taking the perspective of the SEC, a low precision fraud detection model that generates a large number of false positives would waste scarce research and enforcement resources and divert resources from the investigation of true positives.

Activist short sellers who engage in investigative research and widely publicize their detailed reports have emerged as a group of investors that can play a key role in exposing corporate fraud. Most short sellers that engage in equity research do not disseminate their findings publicly and silently wait for a price catalyst without bringing attention to them. In contrast, an activist short seller publishes their research report and engages in public communication with other market participants. The goal of these public communications is to cause an immediate drop in stock price by persuading the stockholders to sell their shares

en masse. Prior research provides evidence that the typical activist short report has significant market impact (e.g., Ljungqvist and Qian 2016).

Short sellers have historically faced resentment and hostility by the public and policymakers, especially in times of crisis. Some have characterized short selling as "inhuman" and "un-American" (Lamont 2012). Activist short sellers disclosing fraud allegations under their own names attract substantial negative attention to target firms and their top executives. This exposes disclosing activists to significant retaliation risks. Companies targeted by short sellers often take legal and regulatory actions against short sellers, by alleging criminal conduct, suing them, hiring private investigators, asking public authorities to investigate them, and manipulating securities markets to impede short selling (e.g., Lamont 2012; Walker and Forbes 2013).

Activist short sellers have exposed a number of high-profile corporate frauds, including the recent cases of Nikola Corp., Luckin Coffee Inc., and Wirecard AG. Under common law, three elements are required to prove fraud: (a) a material false statement made with an intent to deceive, (b) a victim's reliance on the statement, and (c) damages (see, e.g., Lawrence and Wells 2004). The legal definition of fraud precludes the possibility of accidental fraud since what separates error from fraud is intent. In practice, it is difficult to prove intent to deceive, as the evidence is often circumstantial. Even when there is a material false statement, proving intent to deceive would not necessarily meet the legal test for fraud unless there is victim reliance on the false statement and damages. Our communication with activist short sellers indicates that they hold themselves to a high standard and they do not use the "f" word—fraud—in their allegations unless they have strong conviction that corporate misconduct rises to the level of the legal definition of fraud. Indeed, activist fraud campaigns involve substantial investments in uncovering fraud, including private investigators, on-site visits, employee, customer and supplier interviews, and other sources of alternative data, such as satellite and drone imagery.

Notwithstanding their success in uncovering corporate fraud, a criticism often leveled against activist short sellers is that they engage in opportunistic short-and-distort schemes. In a short-and-distort scheme, the activist first shorts the stock and then issues false or misleading negative reports about the company to drive down stock prices and make a quick profit (e.g., Weiner et al. 2017). In the context of pseudonymous short reports published on Seeking Alpha, Mitts (2020) argues that through such schemes short sellers have gained billions of dollars capitalizing on transitory price crashes at the expense of individual investors. On February 12, 2020, a committee of twelve law professors, led by Coffee and Mitts, submitted a petition to the SEC for rule making on short-and-distort practices.

Concerns regarding short activism made headlines during the GameStop episode in January 2021, which resulted in skyrocketing prices for heavily shorted "meme" stocks leaving short sellers scrambling to cover their positions. Social media platforms, such as

Twitter and Reddit, have described such meme stock trading as an act of retail investor revolution against the shorts. An SEC Staff report published on October 18, 2021, probes the GameStop episode and provides evidence that short volume accounted for only a small fraction of overall trading volume. The report concludes that positive retail sentiment rather than dislocations caused by short selling was the main driver of GameStop's meteoric rise. An *ad hoc* committee of academics challenges this conclusion arguing that the SEC Staff report underestimates the amount of trading volume due to short covering and the dislocations caused by the short squeeze on GameStop's price dynamics (Battalio et al. 2022).

Against this backdrop, activist short selling has also attracted the attention of the U.S. Department of Justice (DOJ). Federal prosecutors are currently investigating trading activities by a host of activist short sellers including well-known names like Citron Research and Muddy Waters Research. Among the activities under investigation is whether activist short sellers conspired to perpetrate short-and-distort schemes. On February 21, 2022, the business press reported that the DOJ is evaluating whether it can use the Racketeer Influenced and Corrupt Organizations Act (RICO) in its ongoing probe of activist short sellers. The U.S. Congress enacted the RICO Act in 1970 to fight organized crime and prosecute the Mafia. RICO statutes could enable prosecutors to ensnare a broad swathe of investors involved in an alleged criminal enterprise, even if they participated indirectly.

On February 25, 2022, amidst the DOJ reports, the SEC proposed Rule 13f-2 to enhance the transparency of short selling and deter manipulative short selling campaigns (Rel. No. 34-94313 and Rel. No. 34-94314). If adopted, the proposed rule would require confidential, monthly reporting of short sellers' individual positions, which the SEC would then aggregate by security and disclose to the public. In determining the proposed reporting requirements, the SEC is expressly mindful of concerns raised by academics and market participants that short sellers may engage in abusive or manipulative practices, such as short-and-distort schemes. According to SEC Chair Gary Gensler, the new rules would provide the public and market participants with more visibility into the behavior of large, short sellers and would help regulators reconstruct significant market events, particularly in times of increased market volatility.

The growing challenges to the legitimacy of activist short sellers have potentially deleterious consequences for the future of activist short selling and the incentives of short sellers to uncover corporate fraud and misconduct. Our study contributes to this debate by delineating the economics of activists' fraud disclosures. In the next section, we develop a framework for understanding the tradeoffs activist short sellers face when deciding whether to disclose fraud allegations under their own names. Predictions from our framework zero in on the importance of pre-disclosure short selling activity as a powerful screening variable for identifying more impactful activist short campaign disclosures. Our empirical tests provide evidence that pre-disclosure shorting intensity is informative for subsequent

negative corporate outcomes that are widely tracked by the short-selling community as significant campaign developments, including stock underperformance, negative news coverage, litigation, auditor turnover, and performance-related delistings.

2.2 A framework of activist short sellers' voluntary disclosure decisions

In what follows, we develop a stylized model of the voluntary disclosure of fraud allegations made by activist short sellers. The objective of the model is to delineate explicitly the distinct roles played by private information, shorting risks and disclosure costs in determining a short seller's decision about whether to disclose their private information.

The disclosure framework rests on three fundamental ideas. First, the precision and severity of the private information underlying short sellers' allegations against target firms varies substantially across shorting campaigns. The quality of fraud-related private information uncovered by an activist is idiosyncratic to a specific campaign and can vary across multiple campaigns initiated by the same activist, regardless of their past record of performance. Second, public disclosure exposes activists to retaliation risks, where such risks will generally increase with the severity of allegations lodged against target firms and their top executives. Third, corporate misconduct and fraud activities are complex and exceedingly difficult to uncover. As a result, absent disclosure significant time could elapse before the market independently would discover an activist's private information.

Because investors have the option of short selling without disclosing, a decision to disclose implies that assessed benefits outweigh disclosure costs. Building on this idea, we conceptualize the disclosure decision as a threshold strategy. The disclosure threshold is a function of retaliation risks and other shorting costs and risks, and is higher for more severe allegations. In the context of a threshold strategy, the act of disclosure reveals that the precision and severity of the private information is sufficient to outweigh disclosure costs, where a greater disclosure threshold implies that a greater assessed value of the private signal is necessary to justify disclosure.

The point of departure for our conceptual framework is Ljungqvist and Qian (2016), LQ hereafter. LQ argue that activist short sellers publicly disclose their allegations to circumvent limits to arbitrage by convincing long investors, who do not face short selling costs, to aggressively sell their shares and drive down prices (see also Kovbasyuk and Pagano 2022 on advertising arbitrage more generally). Our stylized model clarifies the specific cost-benefit tradeoffs underlying disclosure and short selling quantity decisions. Intuitively, the disclosure decision is determined by comparing expected payoffs with and without disclosure.[2] The model specifies a short seller's payoffs as

$$Payoff|Non\ Disclosure = \pi(PI) \cdot Q_{ND} - SR(Q_{ND}) \cdot Q_{ND} \cdot \big(1 + TD(PI)\big), \qquad (1)$$

[2] We abstract away from risk preferences. Introducing risk aversion would not change the fundamental nature of the tradeoffs we examine, but would add substantial complexity that is beyond the scope of this paper.

$$Payoff|Disclosure = \pi(PI) \cdot Q_D - \underbrace{(SR(Q_D) \cdot Q_D + RR(PI))}_{Disclosure\ Threshold}, \quad (2)$$

where,

I. PI: Private signal that is informative about the severity of the firm's overpricing.

II. $\pi(PI)$: Expected per share gains from overpricing correction, given private signal PI. π is increasing in PI; $\pi'(PI) > 0$.

III. Q: Quantity of shares sold short. The subscripts D and ND designate disclosure and non-disclosure, respectively.

IV. $SR(Q) \cdot Q$: Expected cost of shorting risks and fees. $SR(Q) > 0$ represents shorting costs and risks per share. $SR(Q)$ is a convex, increasing function of Q; $SR'(Q) > 0, SR''(Q) > 0$.

V. $RR(PI) =$ Expected cost of retaliation risks as a function of the short seller's private signal PI about the severity of the overpricing of a target firm's stock. $RR'(PI) > 0$.

VI. $TD(PI) =$ Expected time to the market's discovery of the activist's private information absent disclosure. TD is increasing in PI; $TD'(PI) > 0$.

Equations (1) and (2) specify a short seller's payoffs as the expected stock returns from informed shorting less expected costs of short selling.[3] Following Cohen et al. (2007) and Engleberg et al. (2018), $SR(Q) \cdot Q$ encompasses explicit stock loan fees and shorting risks associated with loan fee volatility, loan recalls and short squeezes. The properties of this shorting cost function are consistent with results in Beneish et al. (2015) showing that costs and risks of shorting increase with the quantity shorted. It is also the case that larger open short positions certainly exposes short sellers to greater shorting costs and risks. The convexity of the shorting cost function is consistent with evidence showing that the explicit costs and risks of shorting are more sensitive to shorting demand changes at high demand levels (Kolasinski et al. 2013).

Shorting costs and risks increase with the holding horizon as investors must pay stock loan fees over longer periods and face an increased likelihood that lenders will prematurely recall borrowed shares, and stock prices are more likely to rise due to volatility. This can force short sellers to cover their shorts, thereby increasing demand pressure and elevating the risk of a short squeeze (e.g., D'Avolio 2002; Ofek et al. 2004). Engelberg et al. (2018) provide empirical evidence that holding horizons magnify the effects of shorting risks. To reflect the impact of horizon length, equation (1) specifies that $TD(PI)$ multiplicatively magnifies the expected cost of shorting risks and fees. However, disclosure by a short seller publicly reveals their private information to the market and thereby mitigates the

[3] We note that implicit in our disclosure model is the assumption that the private information of short sellers is not fully impounded into prices by short selling activities themselves. Prior research shows that limits to arbitrage reduce the trading aggressiveness of short sellers and dampen the flow of information into prices (e.g., Cohen et al. 2007; Ljungqvist and Qian 2016; Engelberg et al. 2018). Further, daily short sale transaction data is not freely available to the public, impeding investors' ability to respond to changes in shorting activity.

magnifying effects of time to discovery risks. Equation (2) captures this effect by specifying that, conditional on disclosure, the payoff does not depend on $TD(PI)$. However, this comes at a cost to the short seller. Equation (2) reflects that disclosure introduces $RR(PI)$, the expected cost of retaliation risks facing a disclosing short seller. This trade-off between time to discovery and retaliation risks is central to a short seller's disclosure decision.

Using equations (1) and (2), the necessary and sufficient conditions for an activist short seller to disclose their private information publicly follow. A short seller discloses if and only if both of the following conditions hold

$$\pi(PI) \cdot Q_D > SR(Q_D) \cdot Q_D + RR(PI) \equiv Disclosure\ Threshold, \tag{3}$$

$$\pi(PI) \cdot (Q_D - Q_{ND}) > \underbrace{SR(Q_D) \cdot Q_D - SR(Q_{ND}) \cdot Q_{ND}}_{Quantity\ Shift\ Tradeoff} + \underbrace{RR(PI) - SR(Q_{ND}) \cdot Q_{ND} \cdot TD(PI)}_{TD\ vs.\ RR\ Tradeoff}. \tag{4}$$

Equation (3) states that the expected gains from overpricing must exceed the disclosure threshold. Equation (4) states that the incremental gains from disclosure must exceed the incremental risks and costs so that disclosure dominates non-disclosure. The right-hand-side of (4) shows that there are two tradeoffs. The $Quantity\ Shift\ Tradeoff$ results from the fact that disclosure affects the quantity shorted. As we show below, $Q_D > Q_{ND}$. More fundamental is the $TD\ vs.\ RR\ Tradeoff$ in (4). This tradeoff is a consequence of the fact that a disclosure decision must weigh the benefit of accelerating the time to discovery against the expected retaliation risks of disclosure.

Underscoring the intensity of the retaliation risks, Nathan Anderson, the activist short seller and founder of Hindenburg Research, notes that after disclosing fraud allegations against electric-truck maker Nikola Corp. in September 2020, "…*People call me and say they're going to murder me and my entire family*…" (Celarier 2020). In the absence of disclosure, there is no retaliation risk. However, as we discussed earlier, corporate fraud is notoriously hard to detect. Thus, in the absence of disclosure there is likely to be a significant time lag before the discovery of fraud by the market, if ever. Activists facing uncertainty over when or if the market would independently discover the fraud may choose to disclose and assume retaliation risks to accelerate the market revelation of fraud and set in motion the price discovery process.

A key implication of the model is that observing a disclosure implies that the activist has conviction that the expected value of their private overpricing signal exceeds the disclosure threshold. The model also shows that the higher the disclosure threshold, the greater the overpricing implications of the private signal must be to justify disclosure. However, there are two key challenges in empirically investigating the disclosure decision as a function of the model parameters. First, the short sellers' private signal is unobservable. Second, the

magnitude of the disclosure threshold is largely unobservable due to inherent limitations in quantifying the overall cost implications of shorting and retaliation risks.

To address these challenges, we exploit the observability of the quantity of shares sold short in the pre-disclosure period by expanding our framework to incorporate a short seller's quantity choice. Next, we show that the quantity shorted is informative about the short sellers' assessment of their private information and the disclosure threshold, and discuss the implications of this for our empirical analysis.

An investor's short selling quantity decision will depend on the investor's disclosure decision. In the absence of disclosure, the short seller will choose Q to maximize

$$\pi(PI) \cdot Q - SR(Q) \cdot Q \cdot (1 + TD(PI)). \quad (5)$$

In contrast, conditional on the decision to disclose, the short seller will choose Q to maximize

$$\pi(PI) \cdot Q - SR(Q) \cdot Q. \quad (6)$$

Equations (5) and (6) specify that quantity choices depend on expected overpricing and the explicit shorting costs and risks. In (5) we see that time to discovery, TD, influences the quantity choice of a non-disclosing activist. In contrast, (6) reflects that disclosure mitigates this cost, implying that the activist's choice is independent of *TD*. Further, while the disclosure decision depends on expected retaliation risks, (6) reflects that the quantity choice of a disclosing activist does not.[4] Equations (5) and (6) imply that the quantity shorted is greater with disclosure relative to non-disclosure (i.e., $Q_D > Q_{ND}$).

Focusing on the disclosure setting and quantity choice Q defined by equation (6), the first order condition implies that

$$\pi(PI) = SR'(Q)Q + SR(Q). \quad (7)$$

The left-hand-side of (7) is increasing in *PI*. This implies that the optimal choice of quantity shorted Q^* is increasing in the strength of the short seller's private signal PI. This follows because the right-hand-side of (4) is increasing in Q, as $SR''(Q) > 0$. Since the disclosure threshold is $SR(Q) \cdot Q + RR(PI)$, this also implies that higher values of Q are associated with a higher disclosure threshold. This occurs through (a) the direct relation between Q and $SR(Q) \cdot Q$, and (b) the indirect relation between Q and $RR(PI)$, as the optimal choice of the quantity shorted Q^* and the expected retaliation risk are both increasing in PI.

Building on these insights, we hypothesize that the magnitude of changes in pre-disclosure short selling will be informative about the future trajectory of a target firm's outcomes. Specifically, we predict that larger increases in pre-disclosure short selling will be

[4] Consistent with the choice of Q being independent of retaliation risks, we note that it is rare for an activist to disclose the exact size of their short position at the time of the campaign announcement or report changes in their positions post-disclosure. This suggests that retaliation by a target firm against an activist is independent of an activist's unobservable quantity decision. Instead, retaliation is more plausibly a function of the severity of the activist's public fraud allegations and its negative stock price impact post-disclosure.

associated with more severe negative future outcomes. This prediction follows from two fundamental implications of the model. First, the optimal choice of quantity shorted Q^* is increasing in the strength of the short seller's private information signal. Second, greater pre-disclosure quantity on loan is associated with a higher disclosure threshold, where a greater disclosure threshold implies that a greater assessed value of the private signal is necessary to justify disclosure. Our empirical analysis explores the association between pre-disclosure shorting intensity and a comprehensive array of post-disclosure campaign outcomes, including post-campaign stock return performance, negative media coverage, and other negative corporate outcomes that are widely tracked by the short-selling community as significant campaign developments, including auditor turnover, class-action lawsuits, and performance-related delistings.

3. Research Setting

3.1 Identifying fraud allegations by activist short sellers

We obtain information about activist short campaigns from Activist Insight Shorts (AiS), a subscription-based platform providing real-time data to investment professionals. The AiS module offers coverage of established activist short sellers with primary focus on providing actionable real-time feeds regarding important new short campaigns and their subsequent developments. AiS has a team of in-house researchers and journalists tracking short campaigns with the objective of accurately identifying when an activist short seller first announces that they have a short interest in a target company. This can involve a short report posted on their website or Seeking Alpha, a thread of tweets posted on Twitter, a news report, or a conference presentation. After the AiS team identifies a new campaign, they add it to their module and send an email alert to their subscribers. The lag between the campaign announcement and the email alert is 30-40 minutes. A premium data feed subscription allows the subscriber to see the addition of an activist short campaign sooner than the alert is sent out via email and typically within 5 minutes after the short campaign is announced. The AiS dataset includes information about the short seller's identity, the target company's identity, the campaign disclosure date, and the primary allegation.

We zero in on activist short campaigns that disclose allegations of corporate misconduct, including accounting fraud, major business fraud, misleading accounting, stock promotions, pyramid schemes, and other illegal allegations. In accounting fraud allegations, there are suspicions that aspects of the company's accounts are illegal, but the majority of revenues are legitimate. Such allegations include material misrepresentation and suspect related-party transactions that suggest the company is engaging in money laundering or is otherwise intentionally defrauding investors. Major business frauds allege that the majority of a firm's revenues or assets are falsified. Misleading accounting allegations include cases where the company is suspected of having aggressive, careless, or legally questionable accounting measures. Stock promotions are allegations where the company is suspected of being

involved in a pump-and-dump scheme. Pyramid schemes are cases where the company's business model is suspected to be an illegal pyramid scheme.

3.2 Sample construction

We identify activist fraud campaigns in the AiS dataset for which the target companies have their common stock (CRSP share code 10 or 11) listed in one of the three major U.S. stock exchanges (NYSE, NASDAQ, and AMEX). The AiS dataset zeroes in on "first" reports in which a particular activist short seller targets a company for the first time and does not include "follow-on" reports written by the same activist.

Our sample starts in 2008 because this is the first year with AiS information and comprehensive coverage of the stock lending market dynamics by Markit. Our sample ends in 2017 because this is the last year for which we can track campaign outcomes two years out. We require non-missing accounting data from Compustat and non-missing stock lending market data from Markit. We further restrict our sample to exclude penny stocks. Our sample includes 268 fraud campaigns disclosed by 68 unique arbs targeting 181 different companies between 2008 and 2017. The activist list includes well-known arbs, such as Muddy Waters Research, whose primary focus is to short companies that they believe have deceived the market through fraud and to publish their detailed research reports.

Table 1, Panel A, reports the sample distribution by year. The number of campaigns was 3 in 2008 and 2009, increased to 17 in 2010, and after peaking at 48 in 2011, dropped to 15 in 2012. Post 2013, the number of campaigns fluctuated between 32 and 41. In 2017, there were 37 campaigns disclosed by 23 unique arbs who targeted 32 different companies. On average, there are 1.5 campaigns per target firm and 3.9 campaigns per activist short seller. Table 1, Panel B, breaks down the sample by type of primary allegation. Misleading accounting allegations have the highest frequency (27%), and pyramid schemes has the lowest frequency (2%). There is a roughly equal distribution of the remaining allegations across major business fraud (18%), fraudulent stock promotion (18%), accounting fraud (17%), and other illegal (19%). Table 1, Panel C, reports the sample distribution by sector. The evidence shows that activist short sellers target companies with the highest frequency in consumer discretionary (20%), followed by healthcare (19%), and IT (16%).

3.3 Stock lending market dynamics

We begin with a granular analysis of the stock lending demand and supply dynamics around the disclosure of fraud allegations by activist short sellers. We obtain daily data about the quantity of stock on loan (quantity on loan) and the quantity of stock inventory available to lend (lendable quantity) from Markit. We express quantity on loan and lendable quantity as a percentage of the number of shares outstanding.

To capture heterogeneity across campaigns, we split the AiS sample into three groups based on the cumulative change in quantity on loan between day -60 and day -1. The first group includes 87 campaigns that experienced a decrease in quantity on loan leading to the

day prior to the campaign disclosure; that is $\Delta(Q) < 0$. We refer to this first group as the $\Delta(Q)^{-}$ group. We split the remaining 181 campaigns with $\Delta(Q) > 0$ into two groups split at the median value of pre-disclosure increase in quantity on loan. We refer to the group of 91 campaigns with below median increase in quantity loan as the $\Delta(Q)^{+}$ group. We refer to the group of 90 campaigns with above median increase in quantity loan as the $\Delta(Q)^{++}$ group. We then track the stock lending market dynamics across the three campaign groups.

Since the disclosing activist controls the precise disclosure timing, they will surely time the build-up of their short positions leading up to day zero to maximize their profits from an anticipated post-disclosure price drop. Therefore, a significant component of pre-disclosure short selling directly relates to the activity of the disclosing activist and their connected parties. This includes balance-sheet partners that provide financing and institutional support to the disclosing activist short seller, "ghostwriting" hedge funds that develop a short thesis and, wary of litigation risk and reputational concerns, pass along their research to activists for public disclosure, and other parties with whom the disclosing activist shares their research and disclosure plans (Celarier 2020).

Figure 1, Panel A, presents the cumulative change in the quantity on loan.[5] The changes in quantity on loan capture the dynamics of shorting demand. The cumulation period covers the $+/-60$ trading day window centered on the campaign disclosure (day zero). We measure changes relative to the portfolio mean value of the quantity on loan at the start of the cumulation window. The dashed black line presents the dynamics for the pooled sample of activist fraud campaigns. The green line tracks the $\Delta(Q)^{++}$ group, the blue line the $\Delta(Q)^{+}$ group, and the red line the $\Delta(Q)^{-}$ group. For the average campaign there is a gradual increase in the quantity on loan leading to the campaign disclosure. Separating campaigns based on the pre-disclosure changes in shorting demand, we uncover considerable heterogeneity across campaign groups. Table 2, Panel A, reports that the cumulative change in quantity on loan between day -60 and day -1 is -2.37% for the $\Delta(Q)^{-}$ group, 1.15% for the $\Delta(Q)^{+}$ group, which is close to the pooled cross-sectional mean value, and 5.58% for the $\Delta(Q)^{++}$ group. Focusing on the $\Delta(Q)^{++}$group, we observe that the 5.58% change in quantity on loan represents a 73% increase in shorting demand relative to the beginning level of 7.63%.

Figure 1, Panel B, presents the cumulative change in the active lendable quantity. The changes in lendable quantity capture the dynamics of shorting supply. The dashed black line

[5] Following a short sale, the short seller can borrow the shares after trade settlement to minimize borrow cost (e.g., Geczy et al. 2002). Up until 2017, the settlement date was the trade date plus three trading days. After September 5, 2017, the SEC shortened the standard settlement cycle from three trading days after the trade date to two trading days (Rel. No. 34-80295). Markit records stock lending activity when it becomes known to the market; that is, as of the settlement date. To match stock lending activity to the occurrence of an underlying short sale, Figure 1 accounts for the trade settlement period by shifting stock loan transactions back by two or three trading days. For the subsequent portfolio and regression analysis, we use the quantity on loan data observed as of the settlement date since it is what is available in real-time from Markit.

shows that for the average campaign there is a gradual increase in lendable quantity leading to the campaign disclosure. Separating campaigns based on the pre-disclosure changes in shorting demand, we find considerable heterogeneity in lendable quantity dynamics. Table 2, Panel A, reports that the cumulative change in lendable quantity between day -60 and day -1 is -1.38% for the $\Delta(Q)^{-}$ group, 0.73% for the $\Delta(Q)^{+}$ group, which is close to the pooled cross-sectional mean value, and 2.69% for the $\Delta(Q)^{++}$ group.

Figure 1, Panel C, presents the cumulative change in the utilization rate defined as the ratio of the quantity on loan divided by the active lendable quantity. The changes in utilization capture the dynamics of the demand-supply imbalance. Stocks with higher utilization rates have more binding short-sale constraints and elevated short squeeze risk (e.g., IHS Markit 2012; Beneish et al. 2015). Across campaign groups, we find that utilization increases substantially with the level of pre-disclosure shorting intensity. Starting with the $\Delta(Q)^{++}$ group, while active lendable quantity increases by 2.69%, quantity on loan increases by nearly twice as much 5.58%. This combination leads to a large pre-disclosure increase in utilization. Turning to the $\Delta(Q)^{+}$ group, we observe that even though quantity on loan increases by less relative to the $\Delta(Q)^{++}$ group (1.15%), active lendable quantity still does not increase by enough to offset the increase in shorting demand (0.73%), which leads to a moderate pre-disclosure increase in utilization. With respect to the $\Delta(Q)^{-}$ group, we observe that the decrease in quantity on loan (-2.37%) comes with a smaller decrease in lendable quantity (-1.38%), and in combination these two forces lead to an overall decrease in utilization. Table 2, Panel A, reports that the cumulative change in utilization between day -60 and day -1 is -3.85% for the $\Delta(Q)^{-}$ group, 5.37% for the $\Delta(Q)^{+}$ group, which trails the pooled cross-sectional mean value, and 15.05% for the $\Delta(Q)^{++}$ group. Together, the evidence shows that heavily shorted campaigns experience a tightening supply slack leading to the campaign disclosure and, therefore, more binding short-sale constraints.

Figure 1, Panel D, presents the dynamics of stock loan fees leading up to the campaign disclosure. Stock loan fees are determined jointly as the outcome of supply and demand in the stock lending market (Reed 2015). While the marginal cost of borrowing is unobservable, Markit provides a measure of the indicative rate of stock borrow cost at daily frequencies. Consistent with tighter supply slack, the increase in stock loan fees is especially acute for $\Delta(Q)^{++}$ campaigns in the two trading weeks centered on the campaign disclosure. Table 2, Panel B, reports that the cumulative change in stock loan fees between day -60 and day -1 is 3.45% of shares outstanding for the $\Delta(Q)^{-}$ group, 4.57% for the $\Delta(Q)^{+}$ group, which matches the pooled cross-sectional mean value, and 13.92% for the $\Delta(Q)^{++}$ group. Focusing on the $\Delta(Q)^{++}$group, we observe that the 13.92% change in loan fees represents a 183% increase in the indicative cost of borrow relative to the beginning level of 7.61%. While average loan fees increase among heavily shorted campaigns, we observe that there is heterogeneity across campaigns. Indeed, 44.4% of $\Delta(Q)^{++}$ campaigns do not experience an

increase in their stock loan fees. For these cases, a corresponding increase in the lendable quantity at least partially offsets the increase in loan quantity.

Figure 1, Panel E, presents the dynamics of indicative stock loan rebate rates. The rebate rate is the cash interest rate on collateral received by the short seller net of the stock loan fee. The rebate rate results mirror the loan fee dynamics. In particular, we find an especially large decrease in loan rebate rates for the $\Delta(Q)^{++}$ group of campaigns with the highest intensity of pre-disclosure increases in shorting demand. Consistent with a tighter supply slack for $\Delta(Q)^{++}$ campaigns, we observe an especially pronounced decrease in loan rebate rates in the two trading weeks centered on the campaign disclosure.

Figure 1, Panel F, presents the evolution of borrower demand concentration across $\Delta(Q)$ campaign groups and provide insights into the activist short-selling community dynamics. Markit provides a standardized measure of borrower concentration that ranges from 0 to 100. A low score is indicative of dispersed short positions across many borrowers and a high score indicates that outstanding short positions are concentrated in the hands of a few investors. Pooling across campaigns, we observe that borrower concentration decreases leading to the campaign disclosure. The pooled average, however, conceals heterogeneous dynamics. Indeed, there is an especially pronounced decrease in borrower concentration for the $\Delta(Q)^{++}$ group, but not for the $\Delta(Q)^{-}$ group. The dynamics of borrower concentration in the pre-disclosure window is consistent with more information diffusion among the disclosing activist and their interrelated community of balance-sheet partners, ghostwriting hedge funds, and other partners with whom the activist shares their research.

3.4 Profiling activist fraud campaigns

Next, we construct the campaign profiles across $\Delta(Q)$ portfolios. Table 3, Panel A, reports the portfolio mean values of target company characteristics. Appendix 1 provides key variable definitions. The evidence shows that campaigns with the highest pre-disclosure shorting intensity target companies with smaller market capitalization, more positive price momentum, higher stock volatility, lower indicative stock loan fees, and are less likely to receive an audit from a Big-4 accounting firm.[6] A common predictive model of material accounting misstatements is Dechow's et al. (2011) F-Score. Interestingly, there is no systematic overlap between pre-disclosure shorting intensity and the implied probability of material accounting misstatements. The portfolio mean values of the F-Score range vary within a very tight range from 0.26% to 0.29%, which is close to the average value for the general Compustat population.

[6] We note that the most heavily shorted campaigns tend to be target companies with the most positive pre-disclosure stock returns. The seeming disconnect is in fact consistent with market fragmentation due to lack of access to timely short position disclosures for the general public. Short sale transaction data are not publicly available in the U.S. and the general public has access to short interest data only twice per month and only with a significant delay. In practice, daily short interest data is available only to those who can afford the substantial subscription fees to Markit's data feeds, with brokers and hedge funds being the typical Markit clients.

Table 3, Panel B, shows that activist fraud campaigns with higher pre-disclosure shorting intensity are more likely to allege accounting fraud and pump-and-dump schemes. Table 3, Panel C, further shows that campaigns with higher pre-disclosure shorting intensity are more likely to target companies operating in the IT and healthcare sectors.

Table 4, Panel D, considers four indicators related to the credibility of the disclosing activist short seller. The first indicator, I(No Track Record), captures the frequency of campaigns disclosed by short sellers with no prior record of publishing an activist fraud campaign. The second indicator, I(Opinion Based), captures the frequency of opinion-based campaigns for which the activist did not disclose a full report. The third indicator, I(Less Credible), follows LQ and captures the frequency of less credible campaigns based on the short seller's prior campaign return performance. The fourth indicator, I(High Delist BA), follows Hu and Walther (2021) and captures the frequency of campaigns published by activists with delisting "batting average" in excess of 50% across campaigns completed prior to the current campaign disclosure.

In the pooled sample, we observe that 74.6% of campaigns are initiated by short sellers with a prior publication record, 94.4% are accompanied by a full report, 7.8% are initiated by activists classified as less credible per LQ, and 10.8% are initiated by activists with a high delisting batting average. While the frequency of campaigns initiated by activists with no prior track record monotonically decreases across $\Delta(Q)$ portfolios, we do not find evidence of monotonic variation in other indicators. Nevertheless, we include all credibility indicators in the right-hand-side of our regression models to ensure that we extract the incremental information content of $\Delta(Q)$.[7]

4. Pre-Disclosure Shorting and Post-Disclosure Campaign Outcomes

4.1 Stock returns following activist fraud campaign disclosures

Does pre-disclosure short selling intensity explain variation in stock returns following activist fraud disclosures? Figure 2, Panel A, reports the abnormal share turnover in the $+/-20$ trading days centered on the campaign disclosure. We measure share turnover as the number of shares traded divided by the number of shares outstanding and adjust the daily values for the pre-campaign monthly average share turnover. We observe that for the average campaign, trading volume spikes around the disclosure date, which confirms that activist short campaigns are market-moving events. Separating campaigns based on their

[7] Madelaine et al. (2022) argue that activist short sellers can use target prices to convince market participants that the target firms are overpriced. In the Supplement (Table A1), we report that activist short sellers provide an explicit target price for 47.8% of fraud campaigns and that the target price frequency does not differ significantly across $\Delta(Q)$ campaign portfolios. Table A1 further shows that evidence on the predictive power of $\Delta(Q)$ is not sensitive to the inclusion of the target price indicator, and that the target price indicator itself has no incremental predictive power for post-campaign stock returns.

pre-disclosure shorting intensity, the evidence shows that share turnover is especially acute in response to the disclosure of heavily shorted campaigns.

Figure 2, Panel B, plots the cumulative characteristic-adjusted stock returns from one day before to one quarter after the campaign disclosure across campaign groups separated based on pre-disclosure shorting intensity. We adjust stock returns using 25 equal-weight size and B/M benchmark portfolios. For the average campaign, the three-day abnormal return centered on day zero is nearly -8%, which is in line with LQ's evidence of an overall negative reaction to activist short campaigns. Different from prior research, we zero in on heterogeneity across campaigns.

The graphical evidence illustrates that splitting campaigns based on pre-disclosure shorting intensity yields a clean separation of post-disclosure returns. The three-day disclosure return is -4.3% for $\Delta(\mathrm{Q})^{-}$, -8.4% for $\Delta(\mathrm{Q})^{+}$, and -11.3% for $\Delta(\mathrm{Q})^{++}$ campaigns. The evidence also shows that stock prices continue to drift downward following the campaign disclosure and that the post-disclosure drift is more pronounced for $\Delta(\mathrm{Q})^{++}$ campaigns. By the end of the first quarter after the campaign disclosure, the $\Delta(\mathrm{Q})^{++}$ portfolio underperforms the benchmark by as much as -23.5%.

Table 4, Panel A, quantifies the spread in characteristic-adjusted stock returns across $\Delta(\mathrm{Q})$ campaign portfolios. The evidence shows that the negative spread between $\Delta(\mathrm{Q})^{-}$ and $\Delta(\mathrm{Q})^{++}$ campaigns increases in absolute terms from -7.0% in the three-day disclosure window to -24.8% within the first year after the campaign disclosure. The portfolio results confirm that the spread in post-disclosure returns across campaigns partitioned on pre-disclosure shorting activity is both large in magnitude and statistically significant. Since the intensity of pre-disclosure shorting varies with target firm characteristics and campaign features, it remains unclear based on the portfolio evidence whether $\Delta(\mathrm{Q})$ is an incrementally relevant signal for future stock performance.

Table 4, Panel B, reports results from regressions of post-disclosure stock returns on pre-disclosure changes in quantity on loan. The dependent variable is the characteristic-adjusted return cumulated over different windows centered on the campaign disclosure. To facilitate comparisons with the portfolio results, we replace the raw values of pre-disclosure changes in quantity on loan with a rank transformation denoted Rank(ΔQ), which assigns the values 0 to campaigns in the $\Delta(\mathrm{Q})^{-}$ group, 0.5 to campaigns in the $\Delta(\mathrm{Q})^{+}$ group, and 1 to campaigns in the $\Delta(\mathrm{Q})^{++}$ group. The coefficient on Rank(ΔQ) estimates the spread in outcomes across $\Delta(\mathrm{Q})$ campaign portfolios. Control variables include log market cap, B/M, pre-disclosure stock return, volatility, and bid-ask spread, pre-campaign stock loan fees and active supply utilization, institutional ownership, the implied probability of material accounting misstatements, indicators for domestic company targets and for targets audited by Big-4 accounting firms, as well as the indicators related to the credibility of the disclosing activist short seller. The models further include exchange, sector, and year fixed effects.

Standard errors are clustered by campaign date and are robust to heteroscedasticity. We suppress the output of the coefficient estimates on the controls for brevity and report the complete output in the Supplement (Tables A2-A5).

Starting with the three-day window centered on day zero, the estimated coefficient on Rank(ΔQ) shows that the spread across Δ(Q) campaign portfolios is -6.35% after controlling for target company and campaign characteristics. The regression results provide consistent evidence of a post-disclosure downward stock price drift for campaigns with higher pre-disclosure shorting intensity. The estimated coefficient on Rank(ΔQ) increases in absolute terms from -7.74% within the first week after the campaign disclosure to-11.78%, -18.8%, and -24.86% within the ensuing month, quarter, and year, respectively. The coefficient estimates imply that 76% of the one-year-out drift occurs within the first quarter after the campaign disclosure. Taken together, the portfolio and regression results show that higher pre-disclosure shorting intensity is associated with a more severe market reaction as well as significantly more negative long-term returns.

4.2 Heterogeneity within heavily shorted activist fraud campaign disclosures

Next, we explore heterogeneity within heavily shorted activist fraud campaigns. In the context of our framework, equation (3) defines the disclosure threshold as $SR(Q)Q + RR(PI)$. This formulation suggests that for any given level of quantity shorted, Q, the disclosure threshold is impacted by the quantity shorted multiplied by the expected per share cost of shorting risks. That is, higher pre-disclosure short selling activity in combination with elevated short-selling risk implies a higher disclosure threshold and, thus, a greater assessed value of the private signal is necessary to justify disclosure on the part of the activist short seller. Accordingly, we predict that the combination of high pre-disclosure shorting intensity and elevated short-selling risk will magnify the association between pre-disclosure shorting quantity and a target's post-disclosure underperformance.

To test this prediction, we condition our analysis on the explicit shorting fees and key determinants of shorting risk, all measured in the pre-campaign disclosure window between days -60 and -2. With respect to shorting risk determinants, first, we consider the variability of stock loan fees, as short sellers are concerned not only with the level of fees but also with fee variance (D'Avolio 2002; Engelberg et al. 2018). Second, we consider price momentum to capture the risk that stock prices will rapidly move further away from fundamental values (Shleifer and Vishny 1997). Third, idiosyncratic risk, which represents a significant holding cost faced by arbitrageurs (Pontiff 2006). Finally, we consider squeeze risk, which represents the vulnerability of short sellers to predatory trading (e.g., Lamont 2012). A short squeeze occurs when the price of a heavily shorted stock rises and causes short sellers to cover their positions by buying back shares. This forced buying can increase demand pressure on stock price and propel further forced buying. We obtain an *ex ante* score of short squeeze risk from Markit, which proxies for the probability of predatory trading.

Markit bases its squeeze risk score on proprietary algorithms and compares securities lending data to cash market data to determine the risk of a rapid increase in price. In additional analysis, we observe that the score is increasing in stock loan fee variance, past price momentum, and idiosyncratic volatility.

For this analysis, we split the $\Delta(Q)^{++}$ group of heavily shorted activist campaigns into targets with (a) increasing or decreasing pre-disclosure stock loan fees, (b) above or below median pre-disclosure stock loan fee volatility, (c) positive or negative price momentum based on the sign of cumulative pre-disclosure stock returns, (d) above or below median pre-disclosure idiosyncratic stock return volatility, and (e) above or below median short squeeze risk. Table 5 provides evidence of significant heterogeneity within heavily shorted activist campaigns. The coefficient on Rank(ΔQ) estimates the spread in one-year-ahead stock returns after partitioning the $\Delta(Q)^{++}$ campaign group. The key finding is that across partitions, the link between pre-disclosure shorting intensity and post-disclosure stock return performance is amplified when activists aggressively short sell in the face of elevated short-selling costs and risks, as indicated by higher and more volatile stock loan fees, rising stock prices, higher idiosyncratic stock return volatility, and elevated short squeeze risk. While significant across all partitions, the one-year-out stock return spread is as negative as -34.63% for heavily shorted campaigns with elevated short squeeze risk.

To summarize, the cross-sectional regression results are consistent with our conceptual framework whereby short selling costs and risks increase the disclosure threshold. The predictive ability of pre-disclosure shorting intensity for post-disclosure returns is even stronger when combined with elevated short-selling risk.

4.3 Media sentiment following activist fraud campaign disclosures

Public disclosure of fraud allegations by activist short sellers accompanied by negative announcement returns will certainly draw attention to target firms and trigger an information discovery process whereby market participants seek out additional information to assess the full economic and legal implications of the allegations. While information discovery could take many forms, prior research documents the important role played by the business press in collecting and disseminating value-relevant information (e.g., Miller and Skinner 2015; Bushee et al. 2010). Miller (2006) finds that the business press can fulfill its role as a watchdog for accounting fraud not only by undertaking original investigations, but also by rebroadcasting allegations made by other information intermediaries. Neissner and So (2018) document evidence that the financial press systematically tilts its coverage toward negative news, suggesting that journalists would particularly value newsworthy negative information, tips, and leads concerning alleged fraud. As such, the business press may serve as an important information intermediary for producing and broadcasting a flow of negative information over time that underpins the persistent negative returns following disclosures by activist short sellers.

We conjecture that the flow of negative news following fraud disclosures will increase in the severity of the allegations. Specifically, we predict that post-disclosure media sentiment will be significantly decreasing in the magnitude of pre-disclosure short selling intensity. Using media sentiment data from RavenPack News Analytics, we measure media sentiment as the daily difference in the number of strongly positive news articles minus the number of strongly negative sentiment news articles, including full articles, press releases, and other news. We classify news articles using RavenPack's Sentiment Score. The sentiment score ranges from 0 to 100, where 50 indicates neutral sentiment, values above 70 indicate strongly positive sentiment, and values below 30 indicate strongly negative sentiment. RavenPack also provides a Relevance Score that ranges from 0 to 100. A score of 0 means the entity was passively mentioned and scores above 75 indicate that the news story is significantly relevant to the firm. To ensure that a news story is significantly relevant to the firm, we exclude news articles with Relevance Score below the 75 threshold.

Figure 3 plots the cumulative change in media sentiment from one day before to one quarter after the campaign disclosure. We measure the changes relative to the portfolio mean level of media coverage at the start of the cumulation window. The evidence shows that media sentiment turns negative following the disclosure of fraud allegations, and the flow of negative news coverage differs sharply based on pre-disclosure shorting intensity. In particular, we find that the cumulative change in media sentiment in the 60 days following the campaign disclosure is substantially more negative for campaigns in the $\Delta(Q)^{++}$ group relative to campaigns in $\Delta(Q)^{+}$ and $\Delta(Q)^{-}$ groups.

Table 6, Panel A, quantifies variation in media sentiment across $\Delta(Q)$ portfolios. The evidence shows that the spread in negative media coverage between the $\Delta(Q)^{-}$ and $\Delta(Q)^{++}$ campaign groups increases in absolute magnitude from -4.9 in the three-day disclosure window to -22.2 within a quarter after the campaign disclosure, and -47.7 within the ensuing year. Focusing on the one-year-out horizon, the regression results in Table 6, Panel B, show that pre-disclosure short selling intensity is incrementally relevant for explaining variation in post-disclosure media sentiment. Decomposing media coverage, the evidence also shows that the effect of pre-disclosure shorting intensity on negative media coverage in the regular business press is nearly 3 times larger relative to firm-initiated press releases and over 10 times larger relative to other media coverage.

Overall, we find that pre-disclosure shorting intensity is a significant leading indicator of negative media coverage following the disclosure of fraud allegations by activist short sellers. In conjunction with our evidence that targets with the highest pre-disclosure shorting intensity experience the most persistent price drops in the post-disclosure period, the media sentiment dynamics suggest that more consequential fraud allegations are followed by more intensive discovery of negative news stories over time that are gradually impounded into stock prices. In essence, activists' fraud disclosures and detailed

investigative reports serve as a catalyst for negative media coverage in the post-disclosure period. This suggests that business press coverage plays an important role in price discovery by disseminating articles that validate and synthesize information disclosed in the activist report together with other sources, and by making the allegations more accessible to the general investment community.[8]

4.4 Negative corporate outcomes following activist fraud campaign disclosures

We next examine whether pre-disclosure short selling intensity is informative about three negative corporate outcomes that are widely tracked by activist short sellers as significant campaign developments: (a) auditor turnover, (b) class-action lawsuit filing, and (c) performance-related exchange delisting. We obtain auditor change data from Audit Analytics and create an indicator variable I(Auditor Change) that equals one if the target firm announces an auditor change via item 4.01 in Form 8-K. Obtaining legal case data from Audit Analytics, we create an indicator variable I(Class Action) that equals one if a class-action lawsuit is filed against the target firm. Finally, we create an indicator variable I(Delist) that equals one if the target firm delists due to performance-related issues.[9]

Table 7, Panel A, reports the portfolio results and shows that the frequency of auditor change, class-action lawsuit, and performance-related delisting increase in the intensity of pre-disclosure short selling activity. Within the first year after the campaign disclosure, the frequency spread across $\Delta(Q)$ portfolios is 15.3% for auditor change, 19% for class-action lawsuits, and 7.5% for performance-related delistings. By the end of the second year, the spread increases to 24% for auditor change, 26.6% for class-action lawsuits, and 10.8% for delistings. Focusing on the $\Delta(Q)^{++}$ group, within two years after the campaign disclosure, the outcome frequency among target companies is 37.8% for auditor change, 62.2% for class-action lawsuit, and 21.1% for performance related delisting.

Table 7, Panel B, reports multiple regression results and shows that the estimated frequency spreads across $\Delta(Q)$ portfolios are consistently significant after controlling for target company and campaign characteristics. Table 7, Panel C, extends the right-hand-side

[8] Our evidence adds to research on the interplay of short selling activity and media coverage. Bushman and Pinto (2021) provide evidence that following the relaxation of short-sale constraints the overall sentiment of media coverage tilts more negative. Whereas Engelberg et al. (2012) show that short sellers derive an information advantage from their superior ability to extract information from negative news coverage, our evidence implies that fraud allegation disclosures by activist short sellers initiate a process of information discovery that leads to subsequent negative news coverage. Paugam et al. (2021) examine how the narratives used by activist short sellers in their research reports influence subsequent reporting by the business press.

[9] We note that Accounting and Auditing Enforcement Releases (AAERs) typically take several years to play out. Karpoff and Lou (2010) find that for the median enforcement event it takes 26 months from the beginning of the violation until its initial public revelation and an additional 41 months from the initial public revelation until the end of the enforcement action. In our sample of activist fraud campaigns, we identify three unique company targets with AEERs. All three AEERs are preceded by heavily shorted activist campaigns for which the primary allegation is accounting fraud and misleading accounting.

of the regression models to include the three-day campaign disclosure return. This test helps isolate the long-term predictive component of Rank(ΔQ) that is orthogonal to the immediate disclosure effect of activist fraud campaigns. This is important as large price drops are often triggers for shareholder class-action litigation, known as stock-drop lawsuits. Consistent with stock-drop lawsuits, the evidence shows that the more negative the campaign disclosure returns, the higher the likelihood of class-action litigation. While the predictive content of campaign announcement returns attenuates that of pre-disclosure short selling activity, the evidence also shows that Rank(ΔQ) remains a significant predictor of litigation in the two years following the activist fraud campaign disclosure. In addition, the predictive content of Rank(ΔQ) for auditor turnover and performance-related delisting remains intact after controlling for the campaign announcement return.

Together, the evidence shows that pre-disclosure short selling activity embeds information that is relevant for anticipating long-term negative corporate outcomes beyond the immediate announcement price drop and ensuing stock-drop lawsuits. In essence, activists' fraud disclosures set in motion a process that leads to the gradual discovery of additional negative information in the post-disclosure period. Our evidence underscores that the intensity of this information discovery process is increasing with pre-disclosure short selling activity.

4.5 Target company responses to activist fraud campaign disclosures

In the aftermath of a campaign disclosure, the company has the choice to respond to the allegations made by activist short sellers. Brendel and Ryans (2021) provide evidence that the majority of target firms do not respond to short seller attacks, and that when a targeted company responds the most frequent response type is to deny the allegations. In addition, they find that while the choice to respond is associated with more negative three-day campaign disclosure returns, the company response does not help differentiate campaigns in terms of their long-term stock return performance. The stock return performance of responding and non-responding target firms converges to the pooled cross-sectional mean within the first quarter after the campaign disclosure. In contrast to the company response indicator, our evidence shows that the degree of pre-disclosure shorting intensity is informative about the long-term trajectory of a target's post-disclosure stock returns.

Complementing Brendel and Ryans (2021), we examine the extent is whether pre-disclosure short selling intensity is also relevant for anticipating the target company's subsequent decision to respond to the activists' fraud allegations. We obtain AiS data on the indicator variable that equals one if the target firm responds to the activist campaign allegations. The unconditional frequency of responding companies is 50.4% and the mean (median) time to respond for campaigns with identifiable company response dates is 17 (1) days from the campaign disclosure date.

Table 8, Panel A, shows that the frequency of a company response varies around 50% across Δ(Q) portfolios, which implies that pre-disclosure short selling intensity is not univariately relevant for anticipating company responses. Table 8, Panel B, shows that this null result holds in the multivariate regressions regardless of whether we control for the three-day campaign disclosure return. While we do not detect a significant link between pre-disclosure short selling intensity and the likelihood of company response, the significantly negative coefficient on the three-day campaign disclosure return replicates Brendel and Ryans' (2021) evidence that companies are more likely to respond when the immediate reaction to the campaign disclosure is more negative.

4.6 Manipulative short selling and V-shaped reversals

Our conceptual framework models an activist short seller's disclosure decision as a threshold strategy, where the disclosure threshold is increasing in retaliation risks and other shorting costs and risks. In a recent paper, Gao and Lu (2022) present a model in which manipulative short selling in the form of selective disclosure by short sellers arises in equilibrium. However, Gao and Lu (2022) do not incorporate key elements of short activism, including the expected cost of retaliation and shorting risks, as well as the expected time to the market's discovery of the activist's private information absent disclosure.[10] Given the recent legal and regulatory scrutiny of activist short sellers, in this section we empirically address the important question of whether the significant costs associated with disclosing under their own names discourage activists from exploiting their disclosures to manipulate stock prices downward.

Our analysis builds on Mitts (2020), who argues that short-and-distort schemes to manipulate stock prices down lead to "V-shaped" stock price patterns. The idea is that in a short-and-distort scheme, the negative activist opens a short position, then disseminates unverified bad news about the stock to induce panic and drive the stock price down, subsequently booking a profit by rapidly covering their short position prior to the stock price rebounding. Focusing on the publication of pseudonymous short reports on Seeking Alpha, Mitts finds systematic evidence of V-shaped reversals, whereby stock price drops in the

[10] In contrast to our formulation, the model in Gao and Lu (2002) is silent with respect to the activist's quantity choice and the link between quantity and the activist's private information. Talley (2022) analyzes a model in which manipulative V-shape reversals do emerge in equilibrium, but does not consider the disclosure incentives of activist short sellers. Talley's key prediction is that V-shaped reversals caused by manipulative short selling should be predominantly concentrated among large firms for which the expected gains from responding to false allegations are more likely to offset the associated costs of responding. This prediction fits Mitt's (2022) research design choice of focusing on larger companies while excluding companies with less than $2BN in market capitalization. In our sample of activist fraud campaigns, we observe that 80% of all V-shaped reversals are concentrated among smaller firms with less than $2BN in market cap. This casts further doubt on the idea that V-shaped patterns necessarily have the marking of manipulative short selling. If that was the case, the frequency of such patterns should have been more pronounced among larger firms for which the expected net payoff from responding to false allegations is higher.

three-day window centered on the disclosure day, $\text{RET}[-1,+1] < 0$, are followed by sharp reversals during the second to fifth day following the disclosure, $\text{RET}[+2,+5] > 0$. Mitts concludes that pseudonymity facilitates profitable manipulation of market prices.

Different from the setting of pseudonymous reports, we find no evidence of systematic V-shaped reversals in the setting of activist fraud disclosures where activists disclose under their own names. In fact, the average post-disclosure stock return performance (Figure 2) and ensuing negative business press coverage (Figure 3) is consistent with a downward drift due to gradual discovery of negative information rather than a V-shaped reversal due to manipulative shorting activity on the part of the disclosing activist short sellers. Furthermore, our evidence on the increased likelihood of auditor turnover, litigation, and delistings following the publication of heavily shorted activist fraud campaigns provides additional evidence on the role of short activism as an important mechanism for private information revelation. This evidence supports the assessment of Carson Block, the founder of Muddy Waters Research, that Mitt's finding of a V-shaped pattern is not representative of companies targeted by activist short sellers since the majority of pseudonymous Seeking Alpha authors in Mitt's sample are not activist short sellers (Block 2022).

More broadly, whereas Mitts allows that stock price reversals may not be irrefutable evidence of manipulative short selling, he still argues that a V-shaped reversal could still carry presumptive weight. To identify presumed cases of manipulative short selling in our setting, we create an indicator for V-shaped reversals that takes the value one for campaigns with a combination of negative three-day disclosure returns and positive returns during the second to fifth day following the campaign disclosure; that is, $\text{RET}[-1,+1] < 0$ and $\text{RET}[+2,+5] > 0$. Then, we use the V-shaped reversal indicator to split our campaign sample. The V-shaped indicator shows that 36% of activist fraud campaigns exhibit a reversal in the five-day window.[11] Figure 4, Panel A, plots the cumulative characteristic-adjusted stock returns from one day before to ten days after the campaign disclosure across campaign groups. The short-window evidence confirms that our indicator correctly identifies V-shaped reversals in the AiS sample of activist fraud campaigns.

To profit from an artificial drop in price, the negative activist engaging in manipulative short selling would need to rapidly cover their short position prior to the stock price partially or fully rebounding. Focusing on activist fraud campaigns with V-shaped reversals, manipulative short selling would imply rapid covering of short positions and a drop in the quantity of stock on loan soon after the campaign disclosure and prior to the stock price

[11] Mitts (2022) points out that stock price need not fully reverse for there to be market manipulation and his definition of V-shaped reversals includes both partial and full reversals. A complete reversal would require that the return during the second and fifth day following the campaign disclosure is sufficiently positive to overcome the negative three-day disclosure return so that $\text{RET}[-1,+1] < 0$ and $\text{RET}[-1,+5] \geq 0$. Consistent with Mitts's definition, our V-shaped indicator includes both partial reversals (30%) and full reversals (6%).

reversal. Figure 4, Panel B, plots the cumulative change in the quantity of stock on loan and shows that there is no evidence of rapid short covering on the campaign disclosure day and the following trading week that would correspond to the rapid stock price rebound for the subset of activist fraud campaigns with V-shaped reversals. Importantly, Figure 4, Panel C, extends the return cumulation window forward and shows that V-shaped reversals are transient. In fact, the evidence shows that splitting activist fraud campaigns based on the V-shaped reversal indicator does not separate campaigns based on their long-term performance. Within the first year after the activist disclosures, the two campaign groups experience comparable negative returns in the order of -22%.

In summary, our analysis of V-shaped reversals yields two main takeaways. First, the lack of persistent V-shaped reversals is consistent with activist short sellers disclosing fraud allegations under their own names facing significant retaliation risks and other shorting costs and risks that discourage them from engaging in short-and-distort schemes. Second, the documented transient effects of short-term reversals implies that caution should be exercised when placing presumptive weight on V-shaped reversals as evidence of manipulative short selling activity, as other plausible market forces could give rise to such patterns, such as short squeezes and corporate actions that do not derive from the manipulative behavior of short sellers .

4.7 Additional analyses

4.7.1 General demand shifts vs. activist fraud campaign disclosures

Cohen et al. (2007), henceforth CDM, use price-quantity pairs to explore shifts in the stock lending market. CDM classify stocks that have seen an increase in stock loan fee (price) coupled with an increase in the fraction of outstanding shares on loan (quantity) as stocks that have experienced an outward demand shift (DOUT). Using proprietary data between 1999 and 2003, CDM find that the DOUT shift indicator predicts negative abnormal returns. CDM interpret their results as suggesting that the shorting market serves as an important mechanism for private information revelation. Building on CDM, Prado et al. (2016) use Markit data from 2006 to 2010 and report that outward demand shifts are associated with one-month-out abnormal returns of -0.80%

Different from the activist short campaign setting, CDM's DOUT shift indicator does not condition on public disclosure events and, therefore, the nature of the private information underlying the shift is unknown. A relevant question is how general DOUT shifts relate to activist short campaign disclosures. To identify DOUT shifts in the general stock population, we implement a matching approach. We start with our sample of 268 activist fraud campaigns between 2008 and 2017. For each campaign disclosure, we match the target company to stocks in the Markit stock universe using 25 equal-weight size and B/M benchmark portfolios. For each target company, there are, on average, 149 matches within the same size and B/M benchmark portfolio. This procedure generates a sample of 40,151

observations, including (a) the 268 campaign observations and (b) 39,883 non-campaign observations. We note that the campaign and non-campaign observations are on average indistinguishable from each other with respect to the matching characteristics. For each observation, we measure the change in quantity on loan and the change in stock loan fees over the 60-day window leading to the day prior to the disclosure of each activist short campaign. Following CDM, we classify stocks that have seen both their quantity on loan and loan fee rise as stocks that have experienced an outward demand shift.

Figure 2 plots the abnormal share turnover and the cumulative stock returns following outward demand shifts in the matched sample of non-campaign observations (GEN DOUT). Figure 2, Panel A, shows that while activist fraud disclosures exhibit an acute spike in share turnover, general DOUT shifts do not generate a market response in the absence of context. Figure 2, Panel B, shows that the abnormal returns following activist fraud disclosures are orders of magnitude more severe than general DOUT shifts. To illustrate, whereas heavily shorted campaigns underperform the size and B/M benchmark by -16.5% in the month following the fraud campaign disclosure, the matched sample of DOUT stocks underperforms by -1.3%. Figure 3 plots the cumulative change in media sentiment following general DOUT shifts and shows that there is no discernible impact on media coverage. This finding is consistent with general DOUT shifts lacking context in the absence of public disclosure events.

Overall, our evidence underscores the need for a deeper understanding of the source and context of demand shifts in the stock lending market. In the Supplement (Table A6), we also explore whether activist fraud campaign disclosures are predictable based on outward demand shifts. Appendix A1 in the Supplement provides evidence that due to the large number of false positive predictions, the decision to disclose a fraud campaign is effectively unpredictable based on the DOUT shift indicator and other observable characteristics. These additional results corroborate that the cost-benefit tradeoffs underlying an activist's decision to disclose their private information go well beyond the binary identification of DOUT shifts.

4.7.2 Fraud vs. non-fraud campaigns

The analysis so far focuses on the impact of fraud allegations made by activist short sellers. The AiS database also provides information about non-fraud allegations for which contributors do not allege legally questionable activity. Rather, they call attention to high valuation multiples, over-leverage, competitive threats, and industry-wide issues that could put pressure on the company's profitability, as well as legitimate price catalyst events for which the expected time to market discovery is short, such as upcoming dividend cuts, earnings misses, ineffective product roll-ups, and patent expirations. Relative to the nature and severity of fraud allegations, expected retaliation risks are likely orders of magnitude lower, or even nonexistent, for activist short sellers disclosing non-fraud allegations. In fact,

our communication with AiS confirms that when marketing their dataset to institutional clients they systematically separate the two types of campaigns pointing out systematic differences in the characteristics and impact of fraud versus non-fraud short campaigns.

We identify a sample of 536 non-fraud allegations by 90 unique contributors targeting 402 different firms between 2007 and 2017. We report the comparison of fraud versus non-fraud campaigns in the Supplement (Table A7). The evidence shows that non-fraud campaigns tend to target companies with larger market capitalization, lower book-to-market ratio, higher institutional ownership, lower stock loan fees and lower utilization rates, and firms that are more likely to be audited by a Big-4 accounting firm. The comparison further shows that based on prior campaign performance, activists disclosing non-fraud allegations tend to be less credible. They are more likely to engage in opinion-based rather than evidence-based disclosures with a full report. In contrast to the impact of fraud allegations, the evidence also shows that both stock market reaction and the media sentiment response to the disclosure of non-fraud allegations is muted. Indeed, the average three-day disclosure return is indistinguishable from zero, which implies that the market views general allegations as less credible than specific allegations (Appel et al. 2022).

In the context of our disclosure framework, the comparison of fraud campaigns versus non-fraud campaigns implies that (a) disclosure thresholds are lower for short sellers making non-fraud allegations, and (b) the expected value of the private information embedded in non-fraud campaigns is lower. Put differently, fraud allegations have a higher disclosure threshold relative to non-fraud allegations and thus require better private information to justify disclosure.

5. Conclusion

Corporate fraud is notoriously hard to detect. Activist short sellers who widely publicize their evidence have emerged as an important mechanism for exposing corporate fraud. However, short activism has recently come under attack, with the U.S. Department of Justice launching investigations into a host of short sellers, many of whom are notable for their past success in uncovering large corporate frauds. The SEC is also exerting pressure on activist short selling, as lobby groups push regulators for action against so-called short-and-distort schemes (e.g., Coffee et al. 2020). A central concern here is that onerous rule changes and elevated legal exposure will seriously weaken activist short sellers' incentives to pursue risky investments in fraud discovery and undermine the valuable fraud detection and deterrence services they supply to capital markets. It is thus important for research to provide robust evidence about the extent to which activist short sellers enhance the integrity of capital markets and price discovery by uncovering corporate fraud versus undermining capital markets by maliciously engaging in opportunistic short-and-distort schemes.

Our paper provides new insights into the nature of activist short sellers' private information and disclosure tradeoffs. Our disclosure framework explicitly considers the

fundamental tradeoffs a short seller faces when deciding whether to disclose their fraud allegations. Our framework conceptualizes the disclosure decision as a threshold strategy, where the disclosure threshold is a function of the expected cost of retaliation and other shorting costs and risks. The model produces several important implications. First, observing a disclosure implies that the activist has conviction that the expected value of their private signal exceeds the disclosure threshold. Second, the higher the disclosure threshold the greater the overpricing implications of the private signal must be to justify disclosure. Third, greater pre-disclosure short selling intensity implies a higher disclosure threshold, especially when combined with elevated short-selling risk.

Consistent with our disclosure framework, we document that higher pre-disclosure shorting intensity is associated with more severe post-disclosure returns, where higher shorting risks magnify this effect by increasing the disclosure threshold. We also find that post-disclosure negative press coverage, as well as the probability of negative corporate outcomes that are widely tracked by the short-selling community as significant campaign developments, including auditor turnover, class-action lawsuits, and performance-related delistings are all increasing with pre-disclosure shorting intensity. Finally, we consider the use of short-and-distort schemes by activist short sellers. Following Mitts (2020), we examine V-shaped stock price patterns following activists' fraud disclosures. We find no evidence that activist short sellers systematically engage in short-and-distort schemes, documenting that V-shaped reversals are transient and unrelated to the long-term underperformance of target companies.

Recently proposed rules aimed at the public disclosure of short positions and constraints on the unwinding of short positions may provide more visibility into short selling. However, our framework suggests that such rules may also constrain activists' ability to profit from their private information, and therefore dampen their *ex ante* incentives to invest in fraud detection in the first place.[12] Our framework and supporting empirical analyses emphasize the fundamental idea that public disclosures of fraud allegations expose activist short sellers to significant risks of retaliation and elevated shorting risks. That activists disclosing under their own names are willing to assume severe retaliation and shorting risks casts some doubt on claims that they would systematically disseminate false or misleading negative information to earn quick profits from short-and-distort schemes.

[12] Outside the U.S., Jones et al. (2016) examine the mandated public disclosure of large short positions in the E.U. and conclude that the net benefits of the short position disclosure regime are unclear. In a follow-up study focusing on the German market, Jank et al. (2021) provide evidence that short position disclosure policy effectively imposes a short-sale constraint that impedes price discovery.

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Appendix 1
Key Variable Definitions

IHS Markit Stock Lending Market Variables	
Quantity on Loan	Markit's total quantity of stock on loan as a percentage of the number of shares outstanding in the company.
Active Lendable Quantity	Markit's quantity of stock inventory available to lend as a percentage of the number of shares outstanding in the company.
Utilization Rate	Quantity on Loan divided by Active Lendable Quantity.
Stock Loan Fee	Markit's indicative rate of the stock borrow cost on a given day. This is a derived rate using Markit's proprietary analytics and data set. The calculation uses borrow costs between agent lenders and prime brokers as well as rates from hedge funds to produce an indication of the current market rate.
Stock Loan Rebate	Markit's indicative rate of the stock borrow cost, in rebate terms, on a given day. This is a derived rate using Markit's proprietary analytics and data set. The calculation uses borrow costs between agent lenders and prime brokers as well as rates from hedge funds to produce an indication of the current market rate.
Borrower Concentration	Markit's standardized measure of the distribution of borrower demand. The measure ranges from zero to 100. A low score indicates a large number of borrowers with low borrowed values and a top score indicates a single borrower with all the broker demand.
Short Squeeze Risk	Markit's standardized measure of the risk of a price squeeze. The measure compares securities lending data to cash market data to determine the risk of a rapid increase in price. The measure ranges from zero to 100. Higher scores indicates higher risk of a price squeeze.

Target Characteristics	
$\Delta(Q)$	The change in quantity on loan from day -60 to day -1 where day zero is the disclosure day of the activist short campaign.
Rank(ΔQ)	The rank transformation of $\Delta(Q)$ that assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to campaigns in the $\Delta(Q)^{+}$group, and 1 to $\Delta(Q)^{++}$ campaigns.
MV	The market value of equity at the end of the previous quarter $[t-61]$.
B/M	The ratio of the book value of equity to the market value of equity measured at the latest fiscal end before the disclosure of the activist campaign.
$RET[-k_1, +k_2]$	The cumulative stock return from trading day $-k_1$ to trading day $+k_2$ centered on the activist campaign disclosure (day zero).
$VLT[-k_1, +k_2]$	The standard deviation of daily stock returns from trading day $-k_1$ to trading day $+k_2$ centered on the campaign disclosure (day zero).
$SPREAD[-k_1, +k_2]$	The average value of the bid/ask spread scaled by the midpoint from trading day $-k_1$ to trading day $+k_2$ centered on the campaign disclosure (day zero).
$FEE[-k_1, +k_2]$	The average value of the indicative stock loan fee from trading day $-k_1$ to trading day $+k_2$ centered on the campaign disclosure (day zero).

UTIL$[-k_1, +k_2]$	The average value of the active utilization from trading day $-k_1$ to trading day $+k_2$ centered on the campaign disclosure (day zero).
IO	Percentage of shares outstanding in the company held by institutions that manage over $100 million and report their quarterly holdings in SEC Form 13F and N-30Ds. We obtain institutional ownership (IO) data from the WRDS SEC 13F Holdings Data.
Pr(Misstate)	The implied probability of material accounting misstatements based on Dechow's et al. (2011) F-Score.
I(USA)	An indicator that equals one if the target company is headquartered in the U.S.
I(BIG4)	An indicator that equals one if the target company is audited by one of the Big-4 audit firms (Deloitte, PwC, EY, KPMG).

Disclosing Activist Credibility Characteristics	
I(No Track Record)	An indicator that equals one if the activist short seller has no prior publication record of a fraud activist campaign in the AiS data.
I(Opinion Based)	An indicator that equals one for opinion-based campaigns for which the activist did not disclose a full report. We identify opinion-based campaigns using AiS data.
I(Less Credible)	An indicator that equals one for campaigns issued by arbs with non-negative prior campaign return performance. At time t of the campaign disclosure, we measure an arb's prior track record as the rolling average $[-1, +60]$ market-adjusted return of all previous campaigns issued at least 60 trading days prior to time t. If the rolling average is non-negative, we code the campaign disclosed at time t as less credible.
I(High Delist BA)	An indicator that equals one for campaigns issued by arbs with a delisting "batting average" $\geq 50\%$ across campaigns completed prior to the current campaign disclosure date. An arb's delisting batting average captures the fraction of prior completed campaigns that delisted for performance-related reasons prior to time t of the campaign disclosure.

Campaign Outcomes	
Share Turnover	Daily trading volume divided by the number of shares outstanding in the company.
I(Auditor Change)	An indicator variable that equals one if the target firm announces an auditor change via item 4.01 in Form 8-K. We obtain auditor change data from Audit Analytics.
I(Class Action)	An indicator variable that equals one if a class-action lawsuit is filed against the target firm. We obtain legal case data from Audit Analytics (category "type 1" for class-action lawsuits).
I(Delist)	An indicator variable that equals one if the target firm delists due to performance-related issues (CRSP delisting codes 500 and 505 to 588).
I(Company Response)	An indicator variable that equals one if the target firm responds to the activist campaign allegations. We identify target company responses using AiS data.

Media Sentiment Variables	
Media Sentiment, All News	The daily difference in the number of strongly positive minus the number of strongly negative sentiment news articles, including full articles, press releases, and other news. Full articles include news articles composed of both a headline and one or more paragraphs of mostly textual material. Press releases include corporate announcements originated by an entity and distributed via a news provider. Other news includes news articles composed of a headline and no body text (news flashes), and news articles composed of both a headline and one or more segments of mostly tabular data. We construct the media sentiment variables using news coverage data from RavenPack News Analytics. We measure media sentiment using RavenPack's Event Sentiment Score for news articles with Relevance Score $\geq$ 75. RavenPack's Relevance Score ranges from 0 to 100, with values above 75 indicating that the news story is significantly relevant to the firm. RavenPack's Event Sentiment Score ranges from 0 to 100, where 50 indicates neutral sentiment, values above 70 indicate positive sentiment, and values below 30 indicate negative sentiment.
Media Sentiment, Components	The daily difference in the number of strongly positive minus the number of strongly negative sentiment (a) full articles, (b) press releases, or (c) other news. Full articles include news articles composed of both a headline and one or more paragraphs of mostly textual material. Press releases include corporate announcements originated by an entity and distributed via a news provider. Other news include (a) hot news flash, a news article composed of a headline and no body text marked as breaking news during the editorial process, (b) news flash, a news article composed of a headline and no body text, and (c) tabular material, a news article composed of both a headline and one or more segments of mostly tabular data.

Table 1
Activist Fraud Campaign Characteristics

Panel A: Sample distribution by year.

Year	Campaigns	Unique Targets	Unique Activists
2008	3	2	3
2009	3	3	3
2010	17	12	10
2011	48	29	15
2012	15	14	9
2013	32	22	18
2014	35	34	20
2015	37	31	28
2016	41	35	25
2017	37	32	23
Pooled Sample	268	181	68

Panel B: Sample distribution by primary allegation.

Primary Allegation	Campaigns	Unique Targets	Unique Activists
Accounting Fraud	45	38	28
Major Business Fraud	48	28	17
Misleading Accounting	71	57	34
Other Illegal	50	38	29
Pyramid Scheme	5	5	4
Stock Promotion	49	40	17

Panel C: Sample distribution by sector.

Sector	Campaigns	Unique Targets	Unique Activists
Energy	18	9	12
Materials	16	10	12
Industrials	32	23	17
Consumer Discretionary	54	33	30
Consumer Staples	14	12	12
Health Care	51	34	26
Financials	26	16	19
Information Technology	43	34	25
Communication Services	11	8	10
Utilities	1	1	1
Real Estate	2	1	2

This table provides information about the distribution of activist fraud campaigns over time (Panel A), across primary allegation categories (Panel B), and across sectors (Panel C). The sample includes 268 fraud allegation campaigns by 68 unique activist short sellers targeting 181 different target companies between 2008 and 2017.

Table 2
Pre-Disclosure Stock Lending Market Dynamics

Panel A: Pre-disclosure demand and supply dynamics.

	Pre-Disclosure Stock Lending Market Dynamics					
	Quantity on Loan		Lendable Quantity		Utilization Rate	
Δ(Q) Portfolios	Beg. Level	Change	Beg. Level	Change	Beg. Level	Change
$\Delta(Q)^{-}$	10.73%	-2.37%	16.01%	-1.38%	64.07%	-3.85%
$\Delta(Q)^{+}$	4.42%	1.15%	10.44%	0.73%	58.91%	5.37%
$\Delta(Q)^{++}$	7.63%	5.58%	12.52%	2.69%	59.85%	15.05%
Spread	**-3.10%*****	**7.94%*****	**-3.50%***	**4.07%*****	**-4.22%**	**18.90%*****
	(-2.61)	(15.65)	(-1.88)	(7.58)	(-0.80)	(6.16)

Panel B: Pre-disclosure stock loan fee and borrower concentration dynamics.

	Pre- Disclosure Stock Lending Market Dynamics					
	Stock Loan Fees		Stock Rebate Rates		Borrower Concentration Score	
Δ(Q) Portfolios	Beg. Level	Change	Beg. Level	Change	Beg. Level	Change
$\Delta(Q)^{-}$	13.35%	3.45%	-13.09%	-3.43%	20.78	1.45
$\Delta(Q)^{+}$	10.88%	4.57%	-10.58%	-4.56%	29.85	-5.55
$\Delta(Q)^{++}$	7.61%	13.92%	-7.27%	-13.91%	27.13	-7.38
Spread	**-5.74%***	**10.48%****	**5.82%****	**-10.48%****	**6.35*****	**-8.83*****
	(-1.96)	(2.39)	(1.98)	(-2.39)	(2.77)	(-4.50)

This table reports the mean values of changes in the target company's securities lending characteristics from day −60 to day −1 relative to the campaign disclosure (day zero). The beginning level is the value as of day −60. Target companies are split into three portfolios based on the cumulative change in quantity on loan between day -60 and day -1. $\Delta(Q)^{-}$ includes activist fraud campaigns with a decrease in quantity on loan while $\Delta(Q)^{+}$ and $\Delta(Q)^{++}$ include campaigns with below median and above median, respectively, increase in quantity on loan. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table 3
Profiling Activist Fraud Campaigns

Panel A: Portfolio characteristics of target companies.

	$\Delta(Q)^{-}$	$\Delta(Q)^{+}$	$\Delta(Q)^{++}$
OBS.	87	91	90
MV ($MN)	$3,264	$2,622	$1,577
B/M	0.45	0.50	0.41
RET$[-60,-2]$	4.8%	17.4%	21.2%
VLT$[-60,-2]$	3.5%	4.0%	5.5%
SPREAD$[-60,-2]$	0.22%	0.35%	0.28%
FEE$[-80,-61]$	12.5%	10.8%	9.3%
UTIL$[-80,-61]$	64.5%	57.7%	61.2%
IO	52.3%	41.8%	51.5%
Pr(Misstate)	0.26%	0.28%	0.29%
I(USA)	78.2%	70.3%	83.3%
I(BIG4)	48.3%	39.6%	35.6%

Panel B: Portfolio frequency of primary allegations.

Primary Allegation	$\Delta(Q)^{-}$	$\Delta(Q)^{+}$	$\Delta(Q)^{++}$
Accounting Fraud	16.1%	14.3%	20.0%
Major Business Fraud	16.1%	22.0%	15.6%
Misleading Accounting	33.3%	30.8%	15.6%
Other Illegal	23.0%	14.3%	18.9%
Pyramid Scheme	1.1%	0.0%	4.4%
Stock Promotion	10.3%	18.7%	25.6%

Panel C: Portfolio frequency of target company sectors.

Sector	$\Delta(Q)^{-}$	$\Delta(Q)^{+}$	$\Delta(Q)^{++}$
Energy	5.7%	8.8%	5.6%
Materials	5.7%	6.6%	5.6%
Industrials	17.2%	11.0%	7.8%
Consumer Discretionary	20.7%	23.1%	16.7%
Consumer Staples	4.6%	6.6%	4.4%
Health Care	17.2%	14.3%	25.6%
Financials	11.5%	7.7%	10.0%
Information Technology	12.6%	16.5%	18.9%
Communication Services	3.4%	3.3%	5.6%
Utilities	0.0%	1.1%	0.0%
Real Estate	1.1%	1.1%	0.0%

Panel D: Activist short seller credibility characteristics.

	$\Delta(Q)^{-}$	$\Delta(Q)^{+}$	$\Delta(Q)^{++}$
I(No Track Record)	31.0%	25.3%	20.0%
I(Opinion Based)	4.6%	6.6%	5.6%
I(Less Credible)	8.1%	5.5%	10.0%
I(High Delist BA)	8.0%	13.2%	11.1%

This table reports portfolio mean values of target company and activist short seller characteristics. Activist fraud campaigns are split into three portfolios based on the cumulative change in quantity on loan between day -60 and day -1 relative to the campaign disclosure (day zero). $\Delta(Q)^{-}$ includes target companies experiencing a decrease in quantity on loan while $\Delta(Q)^{+}$ and $\Delta(Q)^{++}$ include target companies with below median and above median, respectively, increase in quantity on loan. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table 4
Stock Returns Following Activist Fraud Campaign Disclosures

Panel A: Portfolio results.

	Portfolio Mean Values = Adjusted Stock Return $[-1, +k]$				
$\Delta(Q)$ Portfolios	$[-1, +1]$	$[-1, +5]$	$[-1, +20]$	$[-1, +60]$	$[-1, +252]$
$\Delta(Q)^{-}$	-4.3%	-6.3%	-7.4%	-7.5%	-10.9%
$\Delta(Q)^{+}$	-8.4%	-8.2%	-13.6%	-16.0%	-25.1%
$\Delta(Q)^{++}$	-11.3%	-13.2%	-16.5%	-23.5%	-35.7%
Spread	**-7.0%*****	**-6.9%*****	**-9.1%*****	**-15.9%*****	**-24.8%*****
	(-3.39)	(-2.68)	(-2.87)	(-3.03)	(-2.88)

Panel B: Regression results.

	Dependent Variable = Adjusted Stock Return $[-1, +k]$				
	$[-1, +1]$	$[-1, +5]$	$[-1, +20]$	$[-1, +60]$	$[-1, +252]$
Rank(ΔQ)	**-0.0635*****	**-0.0774*****	**-0.1178*****	**-0.1880*****	**-0.2486*****
	(-2.85)	(-2.97)	(-3.51)	(-3.25)	(-2.71)
Controls	Yes	Yes	Yes	Yes	Yes
Exchange FE	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adj. R^2	6.4%	11.6%	12.1%	11.1%	13.0%
OBS.	268	268	268	268	268

This table provides evidence of variation in characteristic-adjusted stock returns cumulated from the trading day before (-1) to one day $(+1)$, one week $(+5)$, one month $(+20)$, one quarter $(+60)$, and one year $(+252)$ after the activist fraud campaign disclosure (day zero). We adjust stock returns using 25 equal-weight size and B/M benchmark portfolios. The predictor of interest $\Delta(Q)$ is the change in quantity on loan from day -60 to day -1. Rank(ΔQ) is the rank transformation of $\Delta(Q)$ that assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to $\Delta(Q)^{+}$ campaigns, and 1 to $\Delta(Q)^{++}$ campaigns. Panel A reports portfolio results. Panel B reports multivariate regression results. The models include controls for target company and activist characteristics as well as exchange, sector, and year fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table 5
Heterogeneity Within Heavily Shorted Activist Fraud Campaigns

	Dependent Variable = Adjusted Stock Return $[-1, +252]$									
	Stock Loan Fee		Stock Loan Fee Volatility		Price Momentum		Idiosyncratic Volatility		Short Squeeze Risk	
	Increase	Decrease	High	Low	Positive	Negative	High	Low	High	Low
Rank(ΔQ)	**-0.3338*** **	**-0.2152* **	**-0.3024*** **	**-0.2560** **	**-0.2915*** **	**-0.2488** **	**-0.2994** **	**-0.2099** **	**-0.3463*** **	**-0.2361** **
	(-3.27)	(-1.88)	(-2.79)	(-2.23)	(-2.63)	(-2.23)	(-2.44)	(-2.18)	(-3.09)	(-2.18)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exchange FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	19.1%	14.4%	20.5%	11.6%	19.3%	12.5%	18.4%	15.5%	18.2%	15.1%
OBS.	228	221	223	223	225	221	223	223	223	223
$I(\Delta Q^{++})$	55.6%	44.4%	50.0%	50.0%	52.2%	47.8%	50.0%	50.0%	50.0%	50.0%

This table provides evidence of heterogeneity within heavily shorted activist campaigns. Focusing on the pre-disclosure window between days -60 and -2 relative to the campaign disclosure, we split heavily shorted campaigns in the $\Delta(Q)^{++}$ group into targets with (a) increasing or decreasing pre-disclosure stock loan fees, (b) above or below median pre-disclosure stock loan fee volatility, (c) positive or negative price momentum targets based on the sign of cumulative pre-disclosure stock returns, (d) above or below median pre-disclosure idiosyncratic stock return volatility, and (e) above or below median short squeeze score from Markit. Rank(ΔQ) is the transformation of $\Delta(Q)$ assigning the values 0 to $\Delta(Q)^{-}$campaigns, 0.5 to $\Delta(Q)^{+}$campaigns, and 1 to $\Delta(Q)^{++}$ campaigns. The dependent variable is the characteristic-adjusted stock return cumulated from the trading day before (-1) to one year $(+252)$ after the activist fraud campaign disclosure (day zero). We adjust stock returns using 25 equal-weight size and B/M benchmark portfolios. The models include controls for target company and activist characteristics as well as exchange, sector, and year fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table 6
Media Sentiment Following Activist Fraud Campaign Disclosures

Panel A: Portfolio results.

	Portfolio Mean Values = Media Sentiment Change $[-1, +k]$				
$\Delta(Q)$ Portfolios	$[-1, +1]$	$[-1, +5]$	$[-1, +20]$	$[-1, +60]$	$[-1, +252]$
$\Delta(Q)^{-}$	-1.64	-3.20	-10.37	-14.34	-19.39
$\Delta(Q)^{+}$	-4.15	-9.81	-16.46	-22.22	-7.87
$\Delta(Q)^{++}$	-6.54	-13.40	-27.71	-36.53	-67.10
Spread	**-4.90*****	**-10.20*****	**-17.34****	**-22.19****	**-47.71*****
	(-2.62)	(-3.14)	(-2.40)	(-2.06)	(-2.63)

Panel B: Regression results.

	Dependent Variable = Media Sentiment Change $[-1, +252]$			
	All Media	Full Articles	Press Releases	Other News
Rank(ΔQ)	**-46.89****	**-32.79****	**-11.06***	**-3.04***
	(-2.34)	(-2.23)	(-1.96)	(-1.95)
Controls	Yes	Yes	Yes	Yes
Exchange FE	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R^2	3.5%	3.5%	7.6%	19.8%
OBS.	268	268	268	268

This table explores variation in the cumulative change in news coverage sentiment from the trading day before (-1) to one day $(+1)$, one week $(+5)$, one month $(+20)$, one quarter $(+60)$, and one year $(+252)$ after the campaign disclosure. Media sentiment is the difference in the daily number of strongly positive and strongly negative sentiment news articles. Panel A reports results for portfolios formed on $\Delta(Q)$. Panels B reports multivariate regression results. Rank(ΔQ) is a transformation of $\Delta(Q)$ which assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to campaigns in the $\Delta(Q)^{+}$group, and 1 to $\Delta(Q)^{++}$ campaigns. The models include controls for target company and activist characteristics as well as exchange, sector, and year fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table 7
Activist Fraud Campaign Outcomes

Panel A: Portfolio results.

	Portfolio Mean Values = Campaign Outcomes					
	I(Auditor Change)		I(Class Action)		I(Delist)	
$\Delta(Q)$ Portfolios	$[t, t+1]$	$[t, t+2]$	$[t, t+1]$	$[t, t+2]$	$[t, t+1]$	$[t, t+2]$
$\Delta(Q)^{-}$	6.9%	13.8%	29.9%	35.6%	6.9%	10.3%
$\Delta(Q)^{+}$	19.8%	25.3%	40.7%	50.5%	8.8%	16.5%
$\Delta(Q)^{++}$	22.2%	37.8%	48.9%	62.2%	14.4%	21.1%
Spread	**15.3%*****	**24.0%*****	**19.0%*****	**26.6%*****	**7.5%**	**10.8%****
	(2.96)	(3.78)	(2.62)	(3.65)	(1.63)	(1.98)

Panel B: Regression results.

	Dependent Variable =					
	I(Auditor Change)		I(Class Action)		I(Delist)	
	$[t, t+1]$	$[t, t+2]$	$[t, t+1]$	$[t, t+2]$	$[t, t+1]$	$[t, t+2]$
Rank(ΔQ)	**0.1849*****	**0.2679*****	**0.2167*****	**0.3023*****	**0.1233*****	**0.1422*****
	(3.70)	(4.22)	(2.64)	(3.86)	(2.77)	(2.65)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Exchange FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	30.6%	22.6%	8.1%	11.6%	31.1%	31.0%
OBS.	268	268	268	268	268	268

Panel C: Controlling for campaign disclosure returns.

	Dependent Variable =					
	I(Auditor Change)		I(Class Action)		I(Delist)	
	[t , t + 1]	[t , t + 2]	[t , t + 1]	[t , t + 2]	[t , t + 1]	[t , t + 2]
Rank(ΔQ)	**0.1887*** **	**0.2537*** **	**0.1659** **	**0.2532*** **	**0.1077** **	**0.1328** **
	(3.73)	(3.97)	(2.00)	(3.18)	(2.47)	(2.47)
RET[−1, +1]	**0.0639**	**-0.2352**	**-0.8413*** **	**-0.8137*** **	**-0.2589** **	**-0.1557**
	(0.37)	(-1.12)	(-3.09)	(-3.13)	(-2.01)	(-1.22)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Exchange FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	30.3%	22.8%	13.2%	16.2%	32.2%	31.0%
OBS.	268	268	268	268	268	268

This table explores variation in the occurrence of negative corporate outcomes following activist fraud campaign disclosures. Panel A reports results for portfolios formed on Δ(Q). Panels B and C report regression results. The outcome variables are the indicators for auditor turnover, class-action lawsuit, and performance-related delisting over the one-year window [t, t + 1] and two-year window [t, t + 2] after the campaign disclosure. Rank(ΔQ) is a transformation of Δ(Q) which assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to campaigns in the $\Delta(Q)^{+}$group, and 1 to $\Delta(Q)^{++}$ campaigns. The models include controls for target company and activist characteristics as well as exchange, sector, and year fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table 8
Target Company Responses to Activist Fraud Campaigns

Panel A: Portfolio results.

$\Delta(Q)$ Portfolios	Portfolio Mean Values = I(Company Response)
$\Delta(Q)^{-}$	50.6%
$\Delta(Q)^{+}$	51.6%
$\Delta(Q)^{++}$	48.9%
Spread	**-1.70%**
	(-0.22)

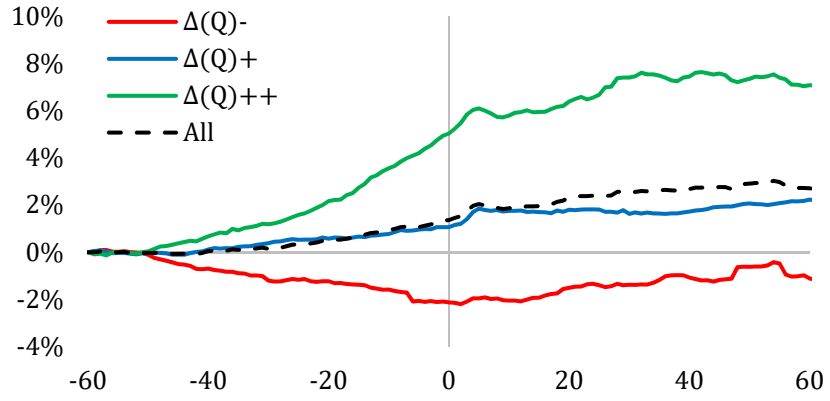
Panel B: Regression results.

	Dependent Variable = I(Company Response)	
	(1)	(2)
Rank(ΔQ)	**0.0059**	**-0.0484**
	(0.08)	(-0.69)
RET$[-1,+1]$	**.**	**-0.8992*****
	.	(-5.27)
Controls	Yes	Yes
Exchange FE	Yes	Yes
Sector FE	Yes	Yes
Year FE	Yes	Yes
Adj. R^2	27.8%	33.5%
OBS.	268	268

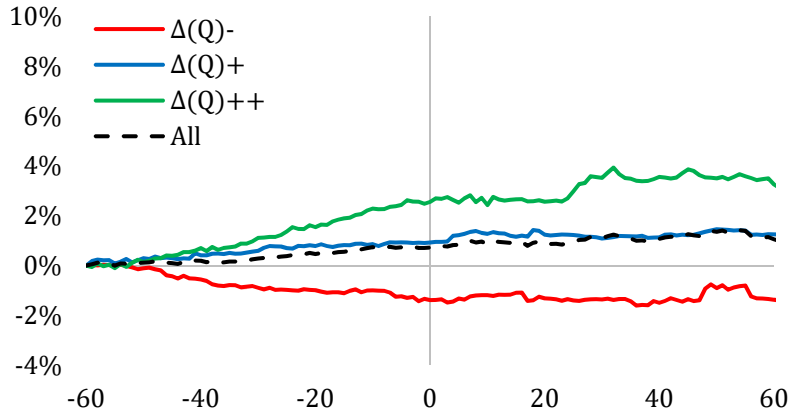
This table explores variation in the target company's choice to respond to the activist fraud campaign. Panel A reports the frequency of target company responses for portfolios formed on $\Delta(Q)$. Panels B reports regression results. The outcome variable is an indicator variable that equals one if the target firm responds to the activist campaign. Rank(ΔQ) is a transformation of $\Delta(Q)$ which assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to campaigns in the $\Delta(Q)^{+}$group, and 1 to $\Delta(Q)^{++}$ campaigns. The models include controls for target company and activist characteristics as well as exchange, sector, and year fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Figure 1
Stock Lending Market Dynamics Around Activist Fraud Campaign Disclosures

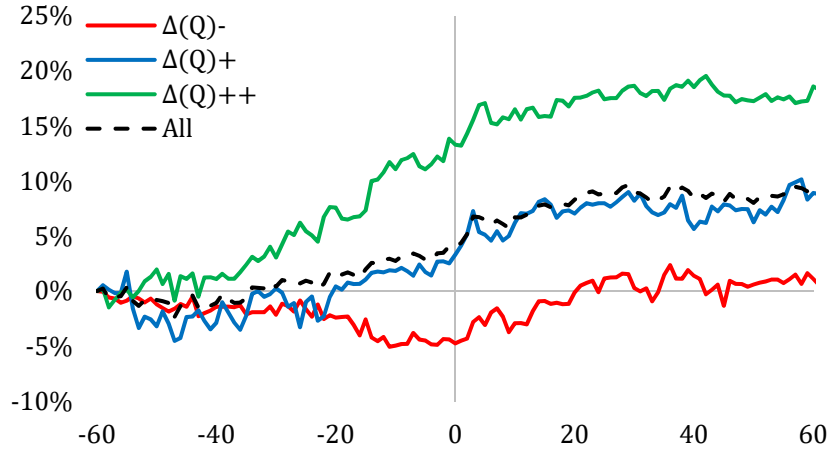
Panel A: Quantity on loan.



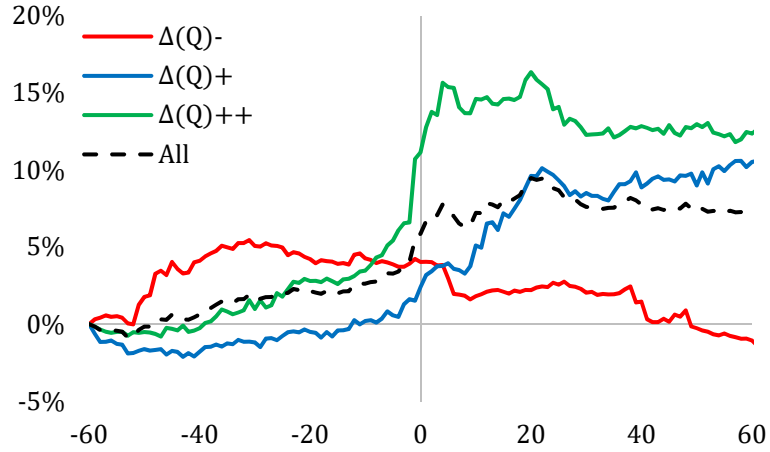
Panel B: Active lendable quantity.



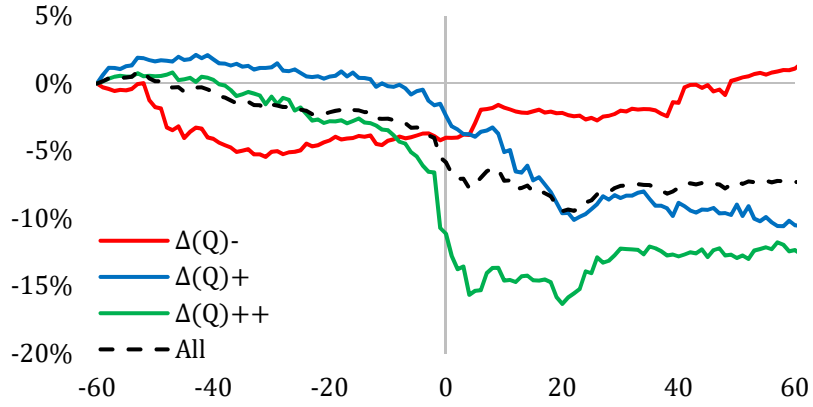
Panel C: Utilization rate.



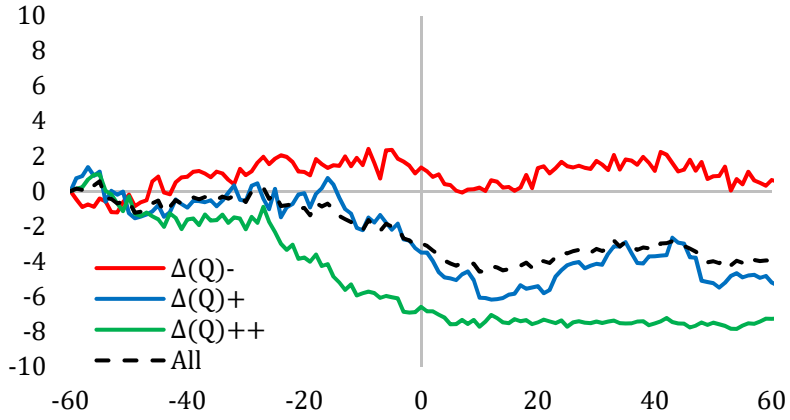
Panel D: Indicative stock loan fees.



Panel E: Indicative stock loan rebate rates.



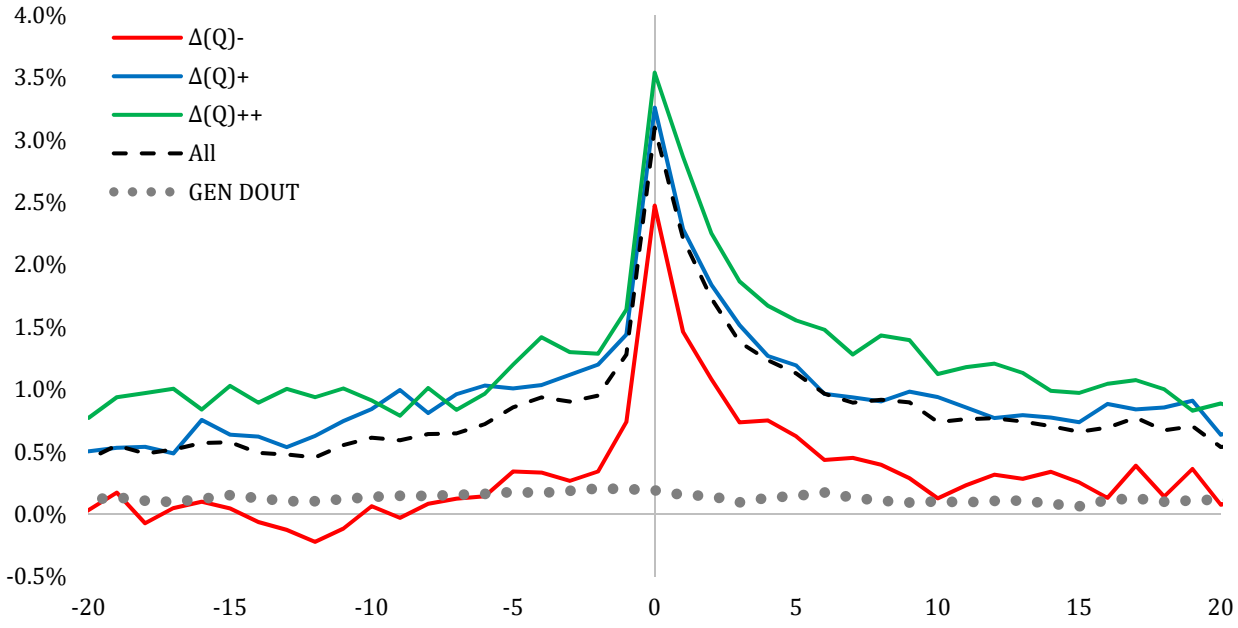
Panel F: Borrower concentration score.



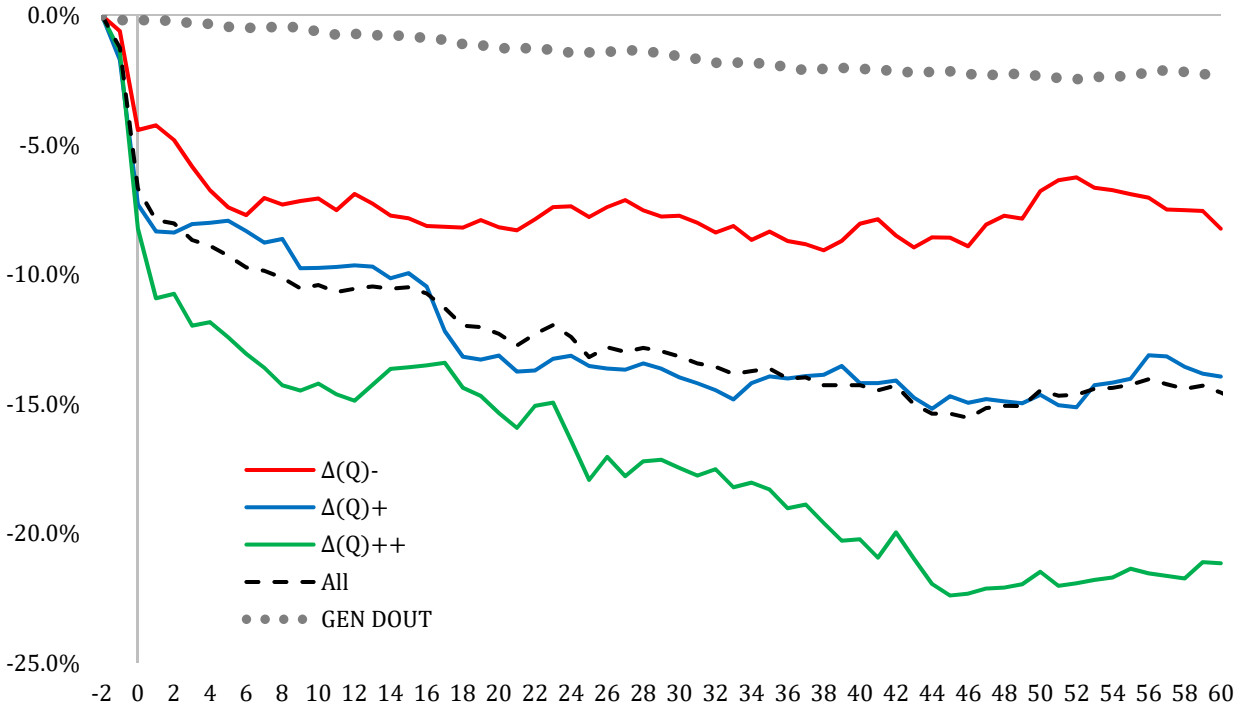
This figure plots the cumulative change in stock lending variables over the +/-60 trading-day window centered on the campaign disclosure (day zero). The changes are measured relative to the beginning portfolio mean value at day-60. Activist fraud campaigns are split into three portfolios based on the cumulative change in quantity on loan between day-60 and day -1. $\Delta(Q)^{-}$ (red line) includes campaigns experiencing a decrease in quantity on loan while $\Delta(Q)^{+}$ (blue line) and $\Delta(Q)^{++}$ (green line) include campaigns with below and above median increase in quantity on loan. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Figure 2
Stock Market Reaction to Activist Fraud Campaign Disclosures

Panel A: Disclosure share turnover.

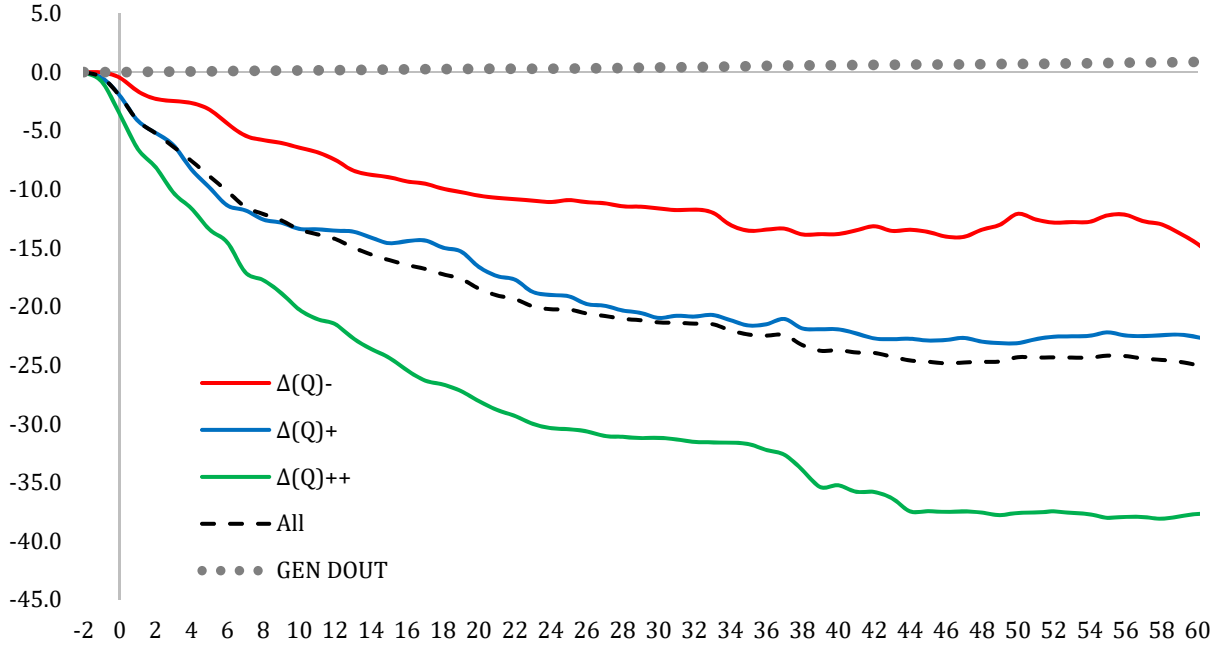


Panel B: Post-disclosure stock returns.



This figure provides evidence of heterogeneity in the stock market reaction across activist fraud campaigns. Panel A plots share turnover in the +/-20 trading day window around the activist fraud campaign disclosure adjusted for the average share turnover in the month prior to day −60. Panel B plots cumulative size and B/M adjusted stock returns from one day before to one quarter after the campaign disclosure (day zero). Activist fraud campaigns are split into three portfolios based on the cumulative change in quantity on loan between day-60 and day -1. $\Delta(Q)^{-}$ (red line) includes campaigns experiencing a decrease in quantity on loan while $\Delta(Q)^{+}$ (blue line) and $\Delta(Q)^{++}$ (green line) include campaigns with below and above median increase in quantity on loan. The dotted grey lines plot the abnormal share turnover and cumulative stock returns following outward demand shifts in the general population (GEN DOUT). To identify general DOUT shifts, we start with our sample of 268 activist short campaigns between 2008 and 2017. For each campaign disclosure, we match the campaign target to stocks in the Markit stock universe using 25 equal-weight size and B/M benchmark portfolios. For each target, we identify, on average, 149 matches within the same size and B/M benchmark portfolio. This procedure generates a sample of 39,883 non-campaign observations. For each non-campaign observation, we measure the change in quantity on loan and the change in stock loan fees over the 60-day window leading to the day prior to the publication of each activist short campaign. We classify stocks that have seen both their quantity on loan and loan fee rise as outward demand shift stocks.

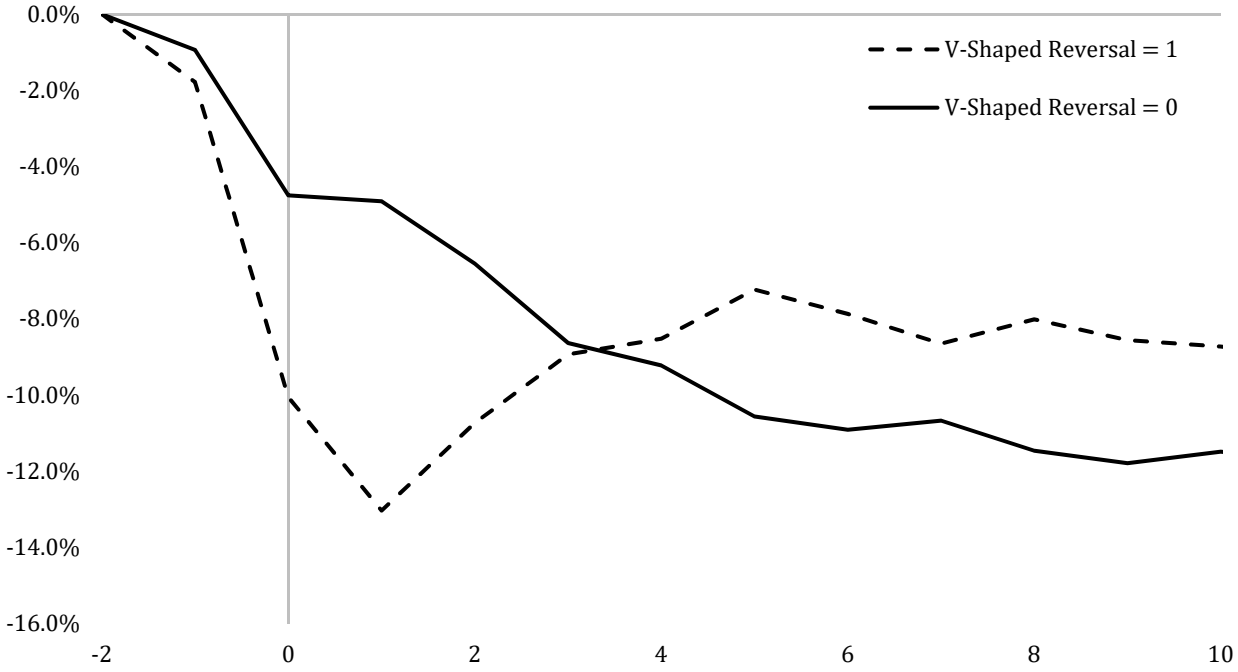
Figure 3
Media Sentiment Following Activist Fraud Campaign Disclosures



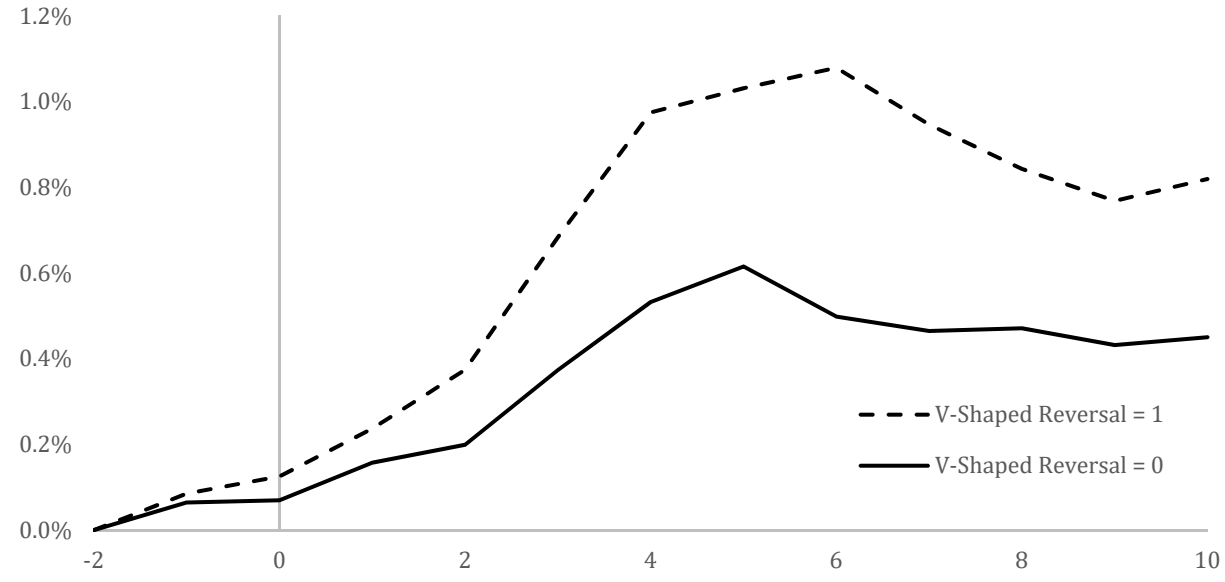
This figure plots the cumulative change in media sentiment from one day before to one quarter after the campaign disclosure (day zero). Media sentiment is the difference in the daily number of strongly positive and strongly negative sentiment news articles. The changes are measured relative to the beginning portfolio mean value. Activist fraud campaigns are split into three portfolios based on the cumulative change in quantity on loan between day-60 and day -1. $\Delta(Q)^{-}$ (red line) includes targets experiencing a decrease in quantity on loan while $\Delta(Q)^{+}$ (blue line) and $\Delta(Q)^{++}$ (green line) include targets with below and above median increase in quantity on loan. The dotted grey line plots the cumulative change in media sentiment following outward demand shifts in the general population (GEN DOUT). To identify general DOUT shifts, we start with our sample of 268 activist short campaigns between 2008 and 2017. For each campaign disclosure, we match the campaign target to stocks in the Markit stock universe using 25 equal-weight size and B/M benchmark portfolios. For each target, we identify, on average, 149 matches within the same size and B/M benchmark portfolio. This procedure generates a sample of 39,883 non-campaign observations. For each non-campaign observation, we measure the change in quantity on loan and the change in stock loan fees over the 60-day window leading to the day prior to the publication of each activist short campaign. We classify stocks that have seen both their quantity on loan and loan fee rise as outward demand shift stocks.

Figure 4
Manipulative Short Selling and V-Shaped Reversals

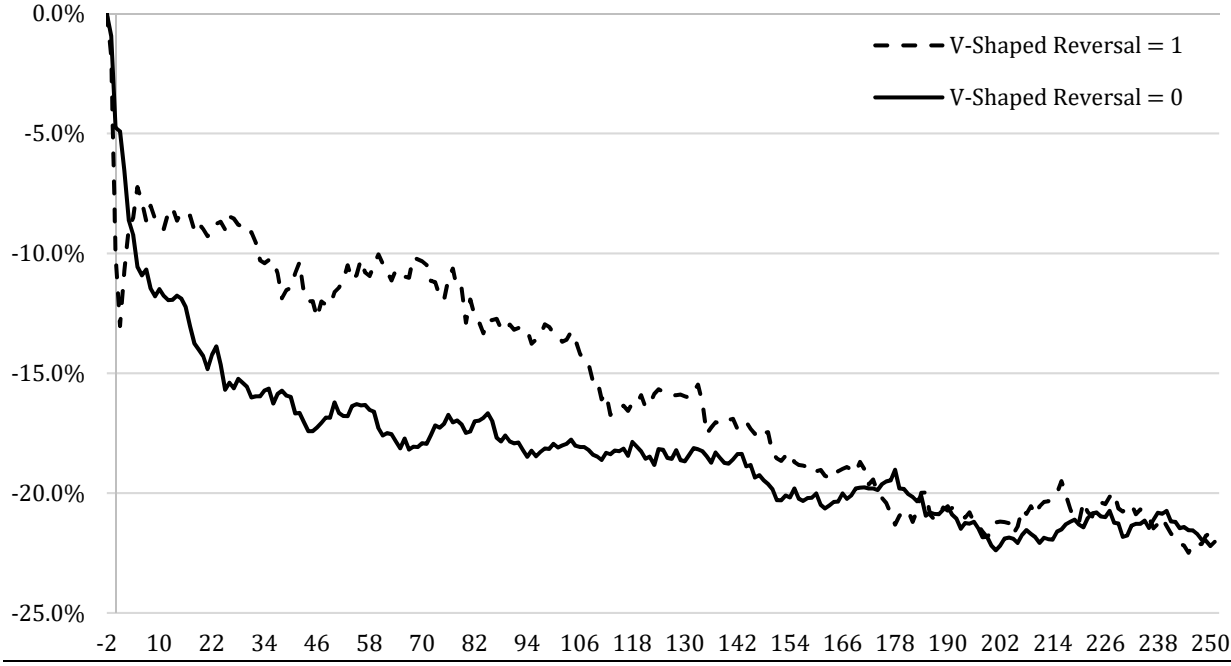
Panel A: Short-term performance.



Panel B: Cumulative change in quantity on loan and short covering.



Panel C: Long-term performance.



This figure provides evidence on the stock performance of activist fraud campaigns with and without short-window V-shaped reversals. Panel A plots the cumulative size and B/M adjusted returns from one day before to ten days after the campaign disclosure. Panel B plots the cumulative change in the stock quantity on loan from one day before to ten days after the campaign disclosure. Panel C plots the cumulative size and B/M adjusted returns from one day before to one year after the campaign disclosure. The indicator for V-shaped reversals takes the value one for campaigns with a combination of negative three-day disclosure returns and positive returns during the second to fifth day following the campaign disclosure. Then, we use the V-shaped reversal indicator to split our campaign sample. The sample includes 268 fraud allegation campaigns, including 97 V-shaped reversals, between 2008 and 2017.

Activist Fraud Campaign Disclosures:
Private Information Revelation or Market Manipulation?

Supplement

Table A1: Use of Target Prices in Activist Fraud Campaigns

Table A2: Stock Market Returns Following Activist Fraud Campaign Disclosures

Table A3: Media Sentiment Following Activist Fraud Campaign Disclosures

Table A4: Activist Fraud Campaign Outcomes

Table A5: Target Company Responses to Activist Fraud Campaigns

Table A6: Predicting Activist Fraud Campaign Disclosures

Table A7: Fraud vs. Non-Fraud Campaigns

Appendix A1: Discussion of "Table A6: Predicting Activist Fraud Campaign Disclosures"

Table A1
Use of Target Prices in Activist Fraud Campaigns

Panel A: Portfolio results.

$\Delta(Q)$ Portfolios	Portfolio Mean Values = I(Target Price)
$\Delta(Q)^{-}$	42.5%
$\Delta(Q)^{+}$	49.5%
$\Delta(Q)^{++}$	51.1%
Spread	**8.6%**
	(1.14)

Panel B: Regression results.

	Dependent Variable = Adjusted Stock Return $[-1, +k]$				
	$[-1, +1]$	$[-1, +5]$	$[-1, +20]$	$[-1, +60]$	$[-1, +252]$
Rank(ΔQ)	**-0.0617*** **	**-0.0747*** **	**-0.1162*** **	**-0.1872*** **	**-0.2574*** **
	(-2.80)	(-2.87)	(-3.44)	(-3.25)	(-2.81)
I(Target Price)	**-0.0210**	**-0.0324**	**-0.0190**	**-0.0079**	**0.1009**
	(-1.01)	(-1.38)	(-0.69)	(-0.20)	(1.58)
Controls	Yes	Yes	Yes	Yes	Yes
Exchange FE	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adj. R^2	6.5%	12.1%	11.9%	10.7%	13.4%
OBS.	268	268	268	268	268

This table explores variation in the use of target prices in activist fraud campaigns. We obtain AiS data on the indicator variable I(Target Price) that equals one if the disclosing activist provided a target price. Panel A reports the frequency of target prices for portfolios formed on $\Delta(Q)$. Panels B reports results from regressions of post-campaign disclosure stock returns cumulated from the trading day before (-1) to one day $(+1)$, one week $(+5)$, one month $(+20)$, one quarter $(+60)$, and one year $(+252)$ after the activist fraud campaign disclosure (day zero). We adjust stock returns using 25 equal-weight size and B/M benchmark portfolios. The predictor of interest $\Delta(Q)$ is the change in quantity on loan from day -60 to day -1. Rank(ΔQ) is the rank transformation of $\Delta(Q)$ that assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to $\Delta(Q)^{+}$campaigns, and 1 to $\Delta(Q)^{++}$campaigns. The models include controls for target company and activist characteristics as well as exchange, sector, and year fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table A2
Stock Returns Following Activist Fraud Campaign Disclosures

	Dependent Variable = Adjusted Stock Return [−1, +k]				
	[−1, +1]	[−1, +5]	[−1, +20]	[−1, +60]	[−1, +252]
Rank(ΔQ)	**-0.0635*** **	**-0.0774*** **	**-0.1178*** **	**-0.1880*** **	**-0.2486*** **
	(-2.85)	(-2.97)	(-3.51)	(-3.25)	(-2.71)
log(MV)	0.0223**	0.0253**	0.0389***	0.0064	0.0336
	(2.45)	(2.45)	(3.16)	(0.32)	(0.90)
B/M	-0.0042	0.0021	0.0149	-0.0604	0.0015
	(-0.18)	(0.08)	(0.40)	(-1.26)	(0.02)
RET[-60-2]	-0.0188	-0.0303*	-0.0279	-0.0335	0.0381
	(-0.95)	(-1.73)	(-1.00)	(-0.96)	(0.61)
VLT[-60-2]	0.0677	0.3667	1.0140*	0.6076	-1.0361
	(0.21)	(0.89)	(1.91)	(0.67)	(-0.94)
LIQ[-60-2]	0.0988***	0.1268***	0.0912	-0.0398	-0.2063
	(3.64)	(3.91)	(1.48)	(-0.36)	(-1.08)
FEE[-80,-61]	0.0005	-0.0014*	-0.0009	-0.0021*	-0.0021
	(0.94)	(-1.89)	(-0.93)	(-1.76)	(-1.34)
UTIL[-80,-61]	0.0000	0.0002	-0.0001	0.0000	0.0002
	(0.01)	(0.39)	(-0.14)	(-0.00)	(0.16)
IO	0.0000	0.0000	0.0002	0.0006	-0.0001
	(0.07)	(0.03)	(0.38)	(0.66)	(-0.08)
Pr(Misstate)	-0.0384	-0.0780	-0.0485	-0.1012	-0.2153*
	(-1.25)	(-1.60)	(-0.88)	(-1.24)	(-1.75)
I(USA)	-0.0242	-0.0120	0.0144	-0.0199	-0.0270
	(-0.63)	(-0.29)	(0.27)	(-0.29)	(-0.19)
I(BIG4)	0.0096	-0.0010	-0.0199	-0.0720	-0.0893
	(0.39)	(-0.03)	(-0.51)	(-1.50)	(-1.12)
I(No Track Record)	0.0015	0.0194	-0.0315	0.0276	-0.0120
	(0.08)	(0.81)	(-1.04)	(0.55)	(-0.14)
I(Less Credible)	0.0331	0.0435	-0.0257	-0.0461	-0.0947
	(0.75)	(0.94)	(-0.54)	(-0.83)	(-0.83)
I(High Delist BA)	-0.0374	-0.0418	-0.0068	-0.0166	0.0212
	(-0.93)	(-0.97)	(-0.15)	(-0.26)	(0.20)
I(Opinion Based)	0.0286	-0.0029	-0.0213	-0.0193	0.0887
	(0.95)	(-0.06)	(-0.38)	(-0.24)	(0.55)
E/S/Y FE	Yes	Yes	Yes	Yes	Yes
Adj. R^2	6.4%	11.6%	12.1%	11.1%	13.0%
OBS.	268	268	268	268	268

This table provides evidence of variation in characteristic-adjusted stock returns cumulated from the trading day before (−1) to one day (+1), one week (+5), one month (+20), one quarter (+60), and one year (+252) after the activist fraud campaign disclosure (day zero). We adjust stock returns using 25 equal-weight size and B/M benchmark portfolios. The predictor of interest Δ(Q) is the change in quantity on loan from day −60 to day − 1. Rank(ΔQ) is the rank transformation of Δ(Q) that assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to $\Delta(Q)^{+}$campaigns, and 1 to $\Delta(Q)^{++}$campaigns. The models include exchange (E), sector (S), and year (Y) fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table A3
Media Sentiment Following Activist Fraud Campaign Disclosures

	Dependent Variable = Media Sentiment Change [−1, +252]			
	All Media	Full Articles	Press Releases	Other News
Rank(ΔQ)	**-46.8862****	**-32.7906****	**-11.0577***	**-3.0378***
	(-2.34)	(-2.23)	(-1.96)	(-1.95)
log(MV)	8.7690	7.6915	0.6511	0.4264
	(0.77)	(0.81)	(0.28)	(0.40)
B/M	25.6528	22.7797*	0.7389	2.1343
	(1.38)	(1.66)	(0.15)	(1.44)
RET[-60-2]	29.7444**	21.5557**	4.5244	3.6642***
	(2.43)	(2.46)	(1.28)	(3.01)
VLT[-60-2]	-442.7922*	-292.2530*	-97.8952	-52.6440*
	(-1.75)	(-1.70)	(-1.35)	(-1.77)
LIQ[-60-2]	23.6407	15.0578	10.3491	-1.7662
	(0.76)	(0.67)	(1.16)	(-0.83)
FEE[-80,-61]	0.0069	0.0904	-0.1100	0.0265
	(0.02)	(0.30)	(-0.78)	(0.86)
UTIL[-80,-61]	-0.8206**	-0.6606**	-0.0946	-0.0654**
	(-2.23)	(-2.29)	(-1.05)	(-2.04)
IO	-0.4332	-0.3838	-0.0623	0.0128
	(-1.02)	(-1.20)	(-0.60)	(0.31)
Pr(Misstate)	6.0037	15.8931	-8.1106	-1.7788
	(0.21)	(0.80)	(-0.84)	(-0.74)
I(USA)	6.8645	-0.3507	5.6803	1.5349
	(0.27)	(-0.02)	(0.88)	(0.79)
I(BIG4)	8.5754	4.5350	3.9253	0.1151
	(0.43)	(0.31)	(0.77)	(0.07)
I(No Track Record)	17.7439	8.1169	8.7938	0.8331
	(0.84)	(0.52)	(1.59)	(0.47)
I(Less Credible)	-39.8336	-31.0847	-2.3203	-6.4285***
	(-1.35)	(-1.36)	(-0.30)	(-2.91)
I(High Delist BA)	12.1728	11.4915	1.5594	-0.8781
	(0.59)	(0.80)	(0.25)	(-0.53)
I(Opinion Based)	46.3052	31.6051	8.7402	5.9599
	(0.79)	(0.63)	(1.27)	(1.14)
E/S/Y FE	Yes	Yes	Yes	Yes
Adj. R^2	3.5%	3.5%	7.6%	19.8%
OBS.	268	268	268	268

This table explores variation in the cumulative change in news coverage sentiment from the trading day before (−1) to one day (+1), one week (+5), one month (+20), one quarter (+60), and one year (+252) after the campaign disclosure day. Media sentiment is the difference in the daily number of strongly positive and strongly negative sentiment news articles. We report multivariate regression results. Rank(ΔQ) is a transformation of Δ(Q) which assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to campaigns in the $\Delta(Q)^{+}$group, and 1 to $\Delta(Q)^{++}$ campaigns. The models include exchange (E), sector (S), and year (Y) fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table A4
Activist Fraud Campaign Outcomes

	Dependent Variable =					
	I(Auditor Change)		I(Class Action)		I(PR Delist)	
	[t, t + 1]	[t, t + 2]	[t, t + 1]	[t, t + 2]	[t, t + 1]	[t, t + 2]
Rank(ΔQ)	**0.1887*** **	**0.2537*** **	**0.1659** **	**0.2532*** **	**0.1077** **	**0.1328** **
	(3.73)	(3.97)	(2.00)	(3.18)	(2.47)	(2.47)
RET[−1, +1]	**0.0639**	**-0.2352**	**-0.8413*** **	**-0.8137*** **	**-0.2589** **	**-0.1557**
	(0.37)	(-1.12)	(-3.09)	(-3.13)	(-2.01)	(-1.22)
log(MV)	-0.0499***	-0.0736***	0.0128	0.0032	-0.0005	0.0017
	(-2.75)	(-2.99)	(0.39)	(0.10)	(-0.03)	(0.10)
B/M	0.0652	0.0598	-0.0875	-0.1336**	0.0676*	0.0310
	(1.06)	(0.84)	(-1.38)	(-2.22)	(1.67)	(0.70)
RET[-60-2]	-0.0001	0.0320	-0.0696	-0.1101**	-0.0708*	-0.1167**
	(-0.00)	(0.57)	(-1.38)	(-2.20)	(-1.85)	(-2.53)
VLT[-60-2]	-0.6675	-1.2951	-0.1861	-0.5019	0.5552	0.9960
	(-0.74)	(-1.32)	(-0.20)	(-0.54)	(0.76)	(1.24)
LIQ[-60-2]	0.0043	-0.0799	0.0217	0.0904	-0.0117	-0.0254
	(0.05)	(-0.87)	(0.18)	(0.88)	(-0.22)	(-0.39)
FEE[-80,-61]	0.0009	-0.0004	0.0006	0.0024	0.0041**	0.0034*
	(0.57)	(-0.30)	(0.36)	(1.25)	(2.59)	(1.96)
UTIL[-80,-61]	0.0007	0.0013	0.0020	0.0027**	0.0006	0.0006
	(0.75)	(1.51)	(1.59)	(2.24)	(0.91)	(0.81)
IO	-0.0005	-0.0007	0.0011	0.0025*	-0.0001	-0.0012
	(-0.74)	(-0.68)	(0.69)	(1.72)	(-0.19)	(-1.49)
Pr(Misstate)	0.1132	-0.0091	0.0314	0.0299	0.0486	0.1860**
	(1.30)	(-0.09)	(0.31)	(0.29)	(0.66)	(2.23)
I(USA)	-0.1397	-0.1753*	-0.2318**	-0.0239	-0.0089	-0.0793
	(-1.56)	(-1.77)	(-2.04)	(-0.19)	(-0.09)	(-0.70)
I(BIG4)	0.1879***	0.1942***	-0.0171	0.0377	0.0755	-0.0012
	(3.24)	(2.71)	(-0.21)	(0.46)	(1.59)	(-0.02)
I(No Track Record)	0.1056**	0.1459**	-0.1167	-0.1055	0.0722*	0.0124
	(2.46)	(2.43)	(-1.61)	(-1.42)	(1.72)	(0.26)
I(Less Credible)	0.0080	-0.0088	-0.0247	-0.1169	0.1060	0.0825
	(0.11)	(-0.10)	(-0.20)	(-1.02)	(1.49)	(0.96)
I(High Delist BA)	0.0877	0.1501	0.0719	-0.0120	-0.0076	-0.0219
	(1.20)	(1.57)	(0.67)	(-0.11)	(-0.14)	(-0.34)
I(Opinion Based)	-0.0487	-0.0778	0.3055**	0.2101	-0.0107	0.0370
	(-0.56)	(-0.73)	(2.33)	(1.64)	(-0.16)	(0.36)
E/S/Y FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	30.3%	22.8%	13.2%	16.2%	32.2%	31.0%
OBS.	268	268	268	268	268	268

This table explores variation in the occurrence of negative corporate outcomes following activist fraud campaign disclosures. The outcome variables are the indicators for auditor turnover, class-action lawsuit, and performance-related delisting over the one- and two-year-windows after the activist campaign disclosure. Rank(ΔQ) is a transformation of Δ(Q) which assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to campaigns in the $\Delta(Q)^{+}$group, and 1 to $\Delta(Q)^{++}$ campaigns. The models include exchange (E), sector (S), and year (Y) fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table A5
Target Company Responses to Activist Fraud Campaigns

	Dependent Variable = I(Company Response)	
	(1)	(2)
Rank(ΔQ)	**0.0059**	**-0.0484**
	(0.08)	(-0.69)
RET$[-\mathbf{1},+\mathbf{1}]$	**.**	**-0.8121*****
	.	(-4.50)
log(MV)	0.0596*	-0.8992***
	(1.96)	(-5.27)
B/M	-0.0146	0.0792***
	(-0.27)	(2.71)
RET$[-60-2]$	0.1508***	-0.0183
	(2.86)	(-0.36)
VLT$[-60-2]$	-0.8436	0.1325**
	(-0.97)	(2.54)
LIQ$[-60-2]$	-0.2516***	-0.7954
	(-2.90)	(-0.94)
FEE$[-80,-61]$	-0.0008	-0.1581*
	(-0.52)	(-1.78)
UTIL$[-80,-61]$	0.0026**	-0.0004
	(2.37)	(-0.26)
Pr(Misstate)	-0.0021	0.0026**
	(-1.51)	(2.47)
IO	0.0514	-0.0021
	(0.62)	(-1.56)
I(USA)	-0.1944*	0.0175
	(-1.69)	(0.23)
I(BIG4)	-0.2758***	-0.2099*
	(-3.65)	(-1.88)
I(No Track Record)	-0.1244*	-0.2689***
	(-1.89)	(-3.66)
I(Less Credible)	-0.1953*	-0.1219*
	(-1.82)	(-1.87)
I(High Delist BA)	-0.0561	-0.1641
	(-0.63)	(-1.51)
I(Opinion Based)	-0.1361	-0.0893
	(-1.26)	(-1.08)
E/S/Y FE	Yes	Yes
Adj. R^2	27.8%	33.5%

This table explores variation in the target company's choice to respond to the activist fraud campaign. The outcome variable is an indicator variable that equals one if the target firm responds to the activist campaign. Rank(ΔQ) is a transformation of Δ(Q) which assigns the values 0 to campaigns in the $\Delta(Q)^{-}$group, 0.5 to campaigns in the $\Delta(Q)^{+}$group, and 1 to campaigns in the $\Delta(Q)^{++}$group. Panel A reports portfolio results. Panel B reports multivariate regression results. The models include exchange (E), sector (S), and year (Y) fixed effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. The sample includes 268 fraud allegation campaigns between 2008 and 2017.

Table A6
Predicting Activist Fraud Campaign Disclosures

	Dependent Variable = I(ASC)	
	(1)	(2)
I(DOUT)	0.7437***	0.7443***
	(4.74)	(4.74)
FEE[−80, −61]	0.0076*	0.0076*
	(1.74)	(1.73)
FEE VLT[-60,-2]	0.0462***	0.0461***
	(3.49)	(3.47)
UTIL[−80, −61]	0.0214***	0.0214***
	(10.50)	(10.48)
RET[−60, −2]	0.3736**	0.3734**
	(2.40)	(2.40)
VLT[−60, −2]	0.0914	0.1066
	(0.03)	(0.04)
Pr(Mistate)	.	0.0232
		(1.34)
Exchange FE	Yes	Yes
Sector FE	Yes	Yes
Month FE	Yes	Yes
Pseudo R^2	11.6%	11.6%
AUROC	66.8%	66.8%
Classification Accuracy	77.1%	76.7%
Misclassification Error	22.9%	23.3%
Specificity	77.2%	76.8%
Sensitivity (Recall)	64.9%	65.3%
Type I Error (1-Specificity)	22.8%	23.2%
Type II Error (1-Sensitivity)	35.1%	34.7%
Positive Predictive Value (Precision)	1.88%	1.86%
Negative Predictive Value	99.7%	99.7%
OBS.	40,151	40,151

This table provides evidence that the decision to disclose a fraud ASC is effectively unpredictable based on the DOUT indicator and other observable variables from the stock lending market. We start with the sample of 268 activist fraud campaigns between 2008 and 2017. For each campaign disclosure, we match the company targeted by activist short sellers to stocks with Markit coverage using 25 equal-weight size and B/M benchmark portfolios. For each target company, we identify, on average, 149 matches that belong in the same size and B/M benchmark portfolios. This procedure generates a sample of 40,151 firm-day observations, including the 268 campaign observations and 39,883 non-campaign observations. For each observation, we measure the change in quantity on loan Δ(Q) and the change in stock loan fees Δ(FEE) over the 60-day window leading to the day prior to the disclosure of each activist fraud campaign. We classify stocks that have seen both their quantity on loan and loan fee rise as stocks that have experienced an outward demand shift. The indicator I(DOUT) turns on for observations that are classified as outward demand shifts. We report results from a logistic regression of the indicator that equals one for activist short campaign observations I(ASC). The right-hand-side predictors include the DOUT shift indicator along with measures of shorting costs and risks, including stock loan fee and its variability, utilization, price momentum, and idiosyncratic volatility as well as the implied probability of material accounting misstatements based on Dechow's et al. (2011) F-Score. The right-hand-side vector also includes exchange, sector, and month fixed effects to account for systematic effects. Standard errors are clustered by campaign date and are robust to heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests.

Table A7
Fraud vs. Non-Fraud Campaigns

Panel A: Sample derivation steps.

	All ASCs	Fraud	Non-Fraud
ASCs between 2008 and 2017 with CRSP coverage of common stocks (CRSP share code 10 and 11) and non-missing disclosure returns	881	296	585
Require non-missing accounting data from Compustat and non-missing securities lending data from Markit.	821	274	547
Exclude penny stocks (<$1 stock price).	**804**	**268**	**536**

Panel B: Profiling non-fraud campaigns.

	Comparisons of mean values			
	Fraud ASCs	Non-Fraud ASCs	Dif.	*t-stat*
MV ($MN)	$2,479	$7,313	-$4,834***	*-3.64*
B/M	0.45	0.28	0.17***	*4.52*
RET[-60,-2]	14.6%	24.5%	-10.1%*	*-1.88*
VLT[-60,-2]	4.3%	4.0%	0.4%*	*1.68*
SPREAD[-60,-2]	0.29%	0.25%	0.03%	*1.10*
FEE[-80,-61]	10.9%	7.9%	3.0%**	*2.08*
UTIL[-80,-61]	61.1%	51.0%	10.1%***	*3.73*
IO	48.5%	57.0%	-8.5%***	*-3.09*
Pr(Misstate)	0.28%	0.29%	-0.01%	*-0.57*
I(USA)	77.2%	97.2%	-20.0%***	*-7.50*
I(BIG4)	41.0%	64.2%	-23.1%***	*-6.33*
I(No Track Record)	25.4%	16.8%	8.6%***	*2.76*
I(Less Credible)	7.8%	14.9%	-7.1%***	*-3.15*
I(High Delist BA)	10.8%	0.0%	10.8%***	*5.69*
I(Opinion Based)	5.6%	21.5%	-15.9%***	*-7.00*

Panel C: Market reaction to non-fraud campaigns.

	Comparisons of mean values			
	Fraud ASCs	Non-Fraud ASCs	Dif.	*t-stat*
Adjusted Stock Return [-1,+1]	-8.0%	0.8%	-8.8%***	*-2.91*
Adjusted Stock Return [-1,+5]	-9.3%	-0.3%	-9.0%***	*-2.95*
Media Sentiment Change [-1,+1]	-4.14	0.76	-4.90***	*-4.43*
Media Sentiment Change [-1,+5]	-8.87	0.20	-9.07***	*-4.50*

This table compares fraud to non-fraud activist short campaigns in terms of target company characteristics, the track record of the disclosing activist short seller, as well as the stock market and media sentiment response to the campaign disclosure. Fraud allegations include accounting fraud, major business fraud, misleading accounting, stock promotions, pyramid schemes, and other illegal allegations. Non-fraud allegations include campaigns where short-sellers do not allege legally questionable activity, but rather point out high valuation multiples, over-leverage, competitive threats, and industry-wide issues that could put pressure on the company's profitability, as well as legitimate price catalyst events, such as dividend cuts, earnings misses, and patent expirations. The sample includes a total of 804 activist short campaigns (ASCs), including 268 fraud allegation campaigns and 536 non-fraud allegation campaigns between 2008 and 2017.

Appendix A1
Discussion of "Table A6: Predicting Activist Fraud Campaign Disclosures"

Are activist fraud campaign disclosures predictable based on outward demand shifts? To identify DOUT shifts in the general stock population, we implement a matching approach. We start with our sample of 268 activist fraud campaigns between 2008 and 2017. For each campaign disclosure, we match the target company to stocks in the Markit stock universe using 25 equal-weight size and B/M benchmark portfolios. For each target company, there are, on average, 149 matches within the same size and B/M benchmark portfolio. This procedure generates a sample of 40,151 observations, including (a) the 268 campaign observations and (b) 39,883 non-campaign observations. We note that the campaign and non-campaign observations are on average indistinguishable from each other with respect to the matching characteristics. For each observation, we measure the change in quantity on loan and the change in stock loan fees over the 60-day window leading to the day prior to the disclosure of each activist short campaign. Following CDM, we classify stocks that have seen both their quantity on loan and loan fee rise as stocks that have experienced an outward demand shift. Separating campaign from non-campaign observations is a highly imbalanced classification task since the frequency of campaign observations is 0.7%.

Table A6 in the Supplement reports results from a logistic regression of the indicator that equals one for activist short campaign observations I(ASC). The vector of right-hand-side predictors includes the DOUT shift indicator along with measures of shorting costs and risks, including stock loan fee and its variability, utilization, price momentum, and idiosyncratic volatility. As an additional predictor, we include the implied probability of material accounting misstatements based on Dechow's et al. (2011) F-Score. The right-hand-side vector also includes exchange, sector, and month fixed effects to account for systematic effects. The logistic regression results indicate that the likelihood of an activist short campaign disclosure is higher for companies with a DOUT shift, more positive momentum, and more binding short-sale constraints as indicated by higher values of stock loan fees, stock loan fee volatility, and utilization of lendable shares. The evidence is broadly consistent with the idea that disclosing activists are more likely to be targeting overpriced companies that are more constrained in the stock lending market to begin with.

Despite the significant regression coefficients, the model performs poorly as a classifier of the decision to disclose a fraud ASC. We first use accuracy as the most intuitive measure of classification performance. Accuracy measures the correct predictions (true positives and true negatives) as a fraction of all predictions. After the inclusion of the implied probability of material misstatements, the classification accuracy is 76.7% and, therefore, the misclassification error is 23.3%. While intuitive to understand, accuracy is not a good metric of classification performance in imbalanced classification tasks involving low frequency events, as in the case of fraud ASC disclosures.

To illustrate the issue, a naïve model that predicts that *every* observation in our sample is a non-campaign observation will achieve classification accuracy of 99.3%, which corresponds to one minus the frequency of ASC observations. Though classification accuracy would suggest excellent model performance, it would simply be reflecting the underlying class distributions. In fact, while the naïve model would trivially achieve high accuracy, it would also misclassify 100% of ASC observations. So, 99.3% accuracy would come with a 100% Type II error rate.

More generally, when dealing with imbalanced class distributions, high accuracy is not necessarily an indicator of good classifier performance—a phenomenon known as the "accuracy paradox" (e.g., Akosa 2017). The accuracy paradox states that when comparing two classification models, the one with the lower accuracy can in fact have higher predictive capability. A more relevant performance metric for imbalanced classification tasks is the positive predictive value also known as classification precision. Classification precision measures the correct positive predictions (true positives) as a fraction of all positive predictions (true positives and false positives). While model accuracy is as high as 76.7%, the model precision is as low as 1.86%, which indicates that 98.14% of the positive predictions are incorrect. The low model precision underscores the large number of *false positives* for predictions of fraud ASC disclosures in the general stock population.

Another popular measure of classification performance is the Area Under the Receiver Operating Characteristics Curve (AUROC). The AUROC is equivalent to the probability that the classifier will rank a randomly chosen positive instance higher than a randomly chosen negative instance (e.g., Fawcett 2006). The AUROC value of 50% (100%) represents a random (perfect) classifier. With imbalanced data, a classifier could have an AUROC value higher than 50% while still misclassifying most of the minority class (Saito and Rehmsmeier 2015). Indeed, Table 6, Panel B, shows that the AUROC is 66.8%, which exceeds the 50% threshold a randomness, even though 98.14% of the positive predictions are incorrect.

Overall, the evidence underscores the difficulty of generating precise predictions of fraud ASC disclosures. Put differently, the decision to disclose a fraud ASC is effectively unpredictable based on DOUT shifts and other observable characteristics.

Additional References

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