

Activist Short-Sellers and Accounting Fraud Allegations

Antonis Kartapanis

McCombs School of Business
The University of Texas at Austin
antonis.kartapanis@mcombs.utexas.edu

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ABSTRACT

This study examines the predictive power of accounting fraud allegations by activist short-sellers. Importantly, only 30% of the allegations are later confirmed. Thus, I also examine costs imposed by unconfirmed allegations. Although there is a high rate of unconfirmed allegations, activist short-sellers still provide the strongest signal that a firm has committed accounting fraud relative to other fraud predictors. Further, these allegations help improve the efficacy of the legal system as securities class actions containing allegations similar to those of activist short-sellers are more likely to settle. Unconfirmed fraud allegations impose some costs on targeted firms as they increase non-meritorious litigation risk and audit fees, but the costs are not significant enough to affect profitability. Further, unconfirmed fraud allegations temporarily depress prices and increase information asymmetry, thus negatively affecting capital markets. Overall, the findings suggest that executives' concerns regarding false allegations are valid, but at the same time, activist short-sellers' allegations are the best predictor of accounting fraud. The findings should be of interest to regulators who are concerned with false rumors spreading in the market.

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1. Introduction

What role do short-sellers play in accounting fraud detection, and at what cost? Failure to detect fraud in a timely manner can cause large losses to investors, employees, and creditors. However, false accusations can impose costs on firms and disrupt capital markets. This study investigates publicly disclosed accounting fraud allegations by short-sellers with a focus on two research objectives: 1) evaluate the predictive power of these reports in identifying accounting fraud and 2) estimate costs imposed by ex-post unconfirmed fraud allegations.

Passive short-sellers (i.e., investors who take short positions without issuing any public disclosures) are sophisticated investors who often act as an effective external governance mechanism (Desai et al. 2006b; Boehmer and Wu 2013). Over the past decade, however, there has been a substantial increase in the presence of *activist* short-sellers (hereafter activists). In contrast to passive short-sellers, activists take a short position and then publish reports explaining their reasoning. These reports often include warnings regarding accounting fraud. Zhao (2018) reports that 28% of activists' reports include such allegations.

However, there is substantial controversy surrounding activists' allegations. Executives claim that the allegations are driven by activists' profit incentives which lead activists to make false allegations (Lamont 2012; Walker and Forbes 2013). The stronger the allegation, the larger the price decline and the larger the profit to short-sellers. During the 2008 financial crisis, multiple false rumors spread in the market. Frustrated with the rumors, JPMorgan Chase's CEO, Jamie Dimon, stated that short-sellers spreading false rumors should serve jail time (Lewis 2008). Similarly, SEC chairman Cox (2008) stated that false rumors caused an irrational panic that threatened market integrity and that "market cops" should "punish those responsible." Regulators in Canada and around the world share similar concerns (Shecter 2017).

Litigation and reputation risks could constrain activists from making false allegations. However, these constraints may be overstated. Although multiple firms have sued activists for spreading false and defamatory information, these lawsuits have had little success due to the high bar to prove defamatory intent even if allegations prove false (Lamont 2012; Walker and Forbes 2013). Former SEC attorney Mark Fickes stated, “it seems odd to many that you could publicly trash a company and affect its stock price negatively and that somehow there would be no consequences for that” (Bloomberg 2014).

Reputation concerns should be more effective in constraining false allegations (Weigelt and Camerer 1988). Inaccurate accusations can damage activists’ reputation and reduce the credibility of future allegations which can damage their future profit (Jackson 2005; Ljungqvist and Qian 2016). Carson Block, head of Muddy Waters Capital, states that the best way for activists to receive acceptance is to prove they are good at what they do (Bryan 2016).

An inaccurate allegation can be unintentional or intentional. For example, activists may rely on noisy measures (e.g., ratio analysis) that lead them to wrong conclusions. On the other hand, activists may intentionally falsely accuse firms or exaggerate findings to profit.¹ Empirically distinguishing between these two is difficult. Thus, the purpose of this study is not to identify whether activists *intentionally* falsely accuse firms of fraud. Rather, the purpose is to examine how accurately activists identify fraud and costs associated with allegations that the SEC or the courts do not later confirm (hereafter unconfirmed allegations).

¹ Alfred Little’s report against Silvercorp Metals Inc. presents an example of activists’ exaggerating findings. The activist hired two geologists to examine discrepancies between Chinese and SEC filings in production levels and quantity of resources. The geologists concluded that the discrepancies could be explained by the different measures used in the two countries. Alfred Little then asked the second geologist to take a harder stance as his conclusion was “too vague and not damaging enough” and then selectively included information from that report in his article. The company sued the activist in the US, but the case was dismissed due to first amendment protection. In 2015, the British Columbia Securities Commission reviewed the case and concluded that while the conduct was “unsavory, we do not find it was clearly abusive to the capital markets and therefore it is not necessary to make an order in the public interest.” See https://www.bpsc.bc.ca/Enforcement/Decisions/PDF/2015_BCSECCOM_187.

To construct the sample, I use Activist Insights (AI), SeekingAlpha, and major activists' websites to identify short-selling reports alleging accounting fraud. The final sample consists of 159 unique fraud cases (hereafter campaigns) initiated between 2006 and 2015. I classify campaigns as containing confirmed fraud allegations if there is a later settled Security Class Action (SCA) or an SEC Accounting and Auditing Enforcement Action (AAER).

Overall, activists' fraud allegations are confirmed 30% of the time, a much higher accuracy rate relative to other commonly used fraud predictors. In a multivariate analysis, using firm-years on Compustat from 2006 to 2015, I find that the probability a firm has committed fraud increases by 23 percentage points if an activist alleges so versus 5 (3) percentage points if the firm is ranked among those with the highest abnormal short interest (F-score). Moreover, activists have the highest precision and lowest type II error (false negative) rates. Focusing on the precision rate, for every 100 firm-years identified as potentially fraudulent using extreme values of abnormal short interest (F-score), only 7 (5) are indeed fraudulent. Thus, it may not be cost beneficial for the SEC to solely rely on those measures for investigative purposes. On the other hand, for every 100 firm-years investigated based on activists' allegations, the SEC would identify 25 fraudulent firm-years.

Prior research finds that activists target firms with weak corporate governance (Chen 2016; Zhao 2018). Thus, although the prior results suggest that activists' *fraud allegations* predict fraud commission, it may be the case that *in general* firms targeted by activists, even with allegations unrelated to accounting fraud (hereafter non-fraud allegations) such as overvaluation, are more likely to commit fraud. As such, the fraud allegation itself may not provide any additional predictive power, and what really matters is whether the firm is being targeted by an activist. Using a sample that includes firms targeted by activists either for accounting fraud or for

other reasons unrelated to fraud, I find that firms targeted specifically with fraud allegations have a 20 percentage point higher probability of having committed fraud.

Unconfirmed allegations, however, may impose costs on targeted firms such as raising non-meritorious litigation risk and audit fees. It is unclear, though, how significant these costs may be. Using a difference-in-differences design, I find that these firms, relative to a group of firms targeted with non-fraud allegations, experience an increase of 9 percentage points in non-meritorious litigation risk and an increase of 21% in audit fees over the two years following the allegations. Nevertheless, these costs do not appear to be large enough to affect future earnings.

I then examine the overall effect of the fraud allegations on the legal system. Specifically, I examine whether SCAs containing allegations similar to those of activists are more likely to survive a motion to dismiss and settle. The courts have limited resources and crowded dockets (Fisch 2001). These resources are best used when examining meritorious cases (Donelson et al. 2018). If activists' allegations are mostly inaccurate but still result in a SCA filing, then these cases, relative to the remaining SCAs, will be more likely to get dismissed and thus undermine the deterrence effect of securities litigation (Pritchard 2002; Hylton 2008). However, if most allegations resulting in a SCA filing are accurate, then they will be more likely to settle. Using SCAs filed from 2006 to 2015, I find that these cases have a 19 percentage point higher probability of settling. Thus, the legal system benefits in terms of efficient resource allocation.

I next examine costs imposed on shareholders by unconfirmed fraud allegations. Although it is expected that the market will react negatively to activists' reports, it is unclear, *ex-ante*, how strong the reaction will be and how long it will take for prices to recover for firms facing unconfirmed fraud allegations. Using all reports included in Activist Insights, I find a significant negative reaction to activists' unconfirmed fraud allegations, which slowly reverses

over the following year. This reversal is in stark contrast to firms facing confirmed fraud allegations and non-fraud allegations as they continue to experience negative returns throughout the year. Further, information asymmetry for firms facing unconfirmed fraud allegations increases, relative to the control group of non-fraud allegations, following the release of the reports. Thus, unconfirmed fraud allegations temporarily distort capital markets.

Finally, I examine whether activists' accuracy and costs from unconfirmed allegations vary based on whether the allegation was against a firm listed in the US through a reverse merger (hereafter RM firms) or a traditionally listed firm (hereafter traditional firms). Activists were credited with uncovering fraud committed by RM firms (Lee et al. 2015; Chen 2016). However, findings from that setting may not generalize to other settings. First, it is unlikely for such a fraud to re-occur as the SEC now highly scrutinizes those firms. Second, activists identified most of those cases by comparing SEC to Chinese (SAIC) filings to identify inconsistencies or visited manufacturing locations to verify their existence. A more 'traditional' accounting fraud cannot be detected in such a way. The findings suggest that activists were about twice as accurate in uncovering fraud committed by RM firms. Further, costs imposed by unconfirmed allegations are higher for traditional firms, although still not significant enough to impact earnings. The benefits to the legal system are solely driven by allegations against RM firms. Overall, activists were more accurate in identifying fraud committed by RM firms, while the costs from unconfirmed allegations appear to be larger for traditional firms.

This study makes two primary contributions to the literature. First, it contributes to the stream of literature examining short-sellers as external corporate governance mechanisms. Prior studies conclude that passive short-sellers are effective at identifying firms misreporting (e.g., Desai et al. 2006b; Karpoff and Lou 2010). This study confirms those results by looking at

activist short-sellers and presents evidence that activists provide a much stronger signal that a firm has committed fraud when compared to abnormal short interest (see Karpoff and Lou 2010). Further, not only is the signal stronger, but it is also less costly for the SEC and shareholders to investigate given the relatively low number of cases. Importantly, however, activists make a lot of unconfirmed allegations as executives argue, which impose some costs on targeted firms. These unconfirmed allegations also hurt shareholders trading in response to these reports.

Second, concentrating on confirmed allegations, the study contributes to the literature examining different sources of fraud revelation (Miller 2006; Dyck et al. 2010). These results suggest that an external watchdog which, in the past, did not participate in uncovering fraud is now actively doing so. Although Dyck et al. (2010) find only five fraud cases uncovered by activists, this study finds more than 40 such instances.²

Finally, the findings should be of interest to regulators, such as the SEC and the Ontario Securities Commission, who are interested in protecting market integrity from false rumors. Although it is difficult to monetize all costs and benefits arising from these allegations, this study provides insights of their effects on firms, the legal system, and the market.

2. Prior research

2.1 Passive short-sellers as a corporate governance mechanism

Academics consider passive short-sellers to be sophisticated investors. Early studies find that highly shorted firms later underperform (Asquith and Meulbroek 1995; Desai et al. 2002). Short-sellers increase their positions prior to restatements, firm disclosures that result in securities fraud filings, and revelation of financial misconduct (Griffin 2004; Desai et al. 2006b; Karpoff and Lou 2010). Short-sellers also appear to trade on accrual quality as short positions are

² Dyck et al. (2010) concentrate on fraud cases with settlements over \$3M and total assets over \$750M.

positively related with accruals for firms restating (Desai et al. 2006b). Karpoff and Lou (2010) find that short-sellers take larger positions in firms with more severe misrepresentations and that short interest is positively related with how quickly the misconduct is revealed.

Prior studies further show that passive short-sellers also deter earnings management. Rule 202T of Regulation SHO facilitated short-selling for about one third of the Russell 3000 firms by exempting those firms from price tests for a pilot period from May 2, 2005 to August 6, 2007. Using this setting, Fang et al. (2016) find that affected firms decreased (increased) earnings management during (after) the pilot study. The study also shows that the decrease in short-selling costs helped short-sellers reveal fraud committed during the pre-pilot period. Overall, prior studies conclude that passive short-sellers both detect and prevent earnings management.

This study differs from the earlier mentioned studies in three ways. First, these studies *mainly* focus on ex-post confirmed cases (e.g., the firm faces an SEC action). In contrast, Richardson (2003) studies a large sample of firms without conditioning on ex-post confirmation. He finds that short-sellers do not trade on accruals, calling into question how informative short positions are. I similarly examine all activists' fraud allegations unconditional of their veracity.

Second, most studies use observed short interest to infer short-sellers' beliefs. In contrast, I concentrate on cases where activists publicly allege that a firm commits fraud. Activists' allegations should provide a stronger signal to shareholders and regulators. Karpoff and Lou (2010) find that about 2% of firm-months in the top 5% of abnormal short interest commit fraud, and this is significantly higher than for the rest of the firms. This suggests that abnormal short interest can be used to identify fraud, but implies that to use this as an investigative tool, the SEC and shareholders would have to examine hundreds of firms to identify a few committing fraud. Given resource constraints, this may not be cost effective. As activists explicitly identify their

targets and specific issues, investors and the SEC can focus on significantly fewer firms.

Finally, in contrast to passive short-sellers, activists may spread “panic” to the market. A good example is Barry Minkow, formerly the CEO of ZZZZ Best. After serving his prison sentence, he became an activist short-seller. In 2011, Minkow pleaded guilty to securities fraud related to falsely accusing Lennar Corp. of deceptive accounting. The firm’s market value declined by about \$580M (Whelan 2011). Minkow did so for personal gain and knew that the allegations were false. Passive short-sellers do not have such power as the market can only speculate as to the reasoning behind their trades. Thus, activists face different incentives and it is ambiguous whether findings from prior studies on passive short-sellers generalize to activists.

2.2 Activist short-sellers

Over the past five years, there has been an increasing interest from academics in activists. However, the number of studies is relatively limited due to data availability. Ljungqvist and Qian (2016) show that short-sellers with limited capital can correct overvaluation by publicly disclosing their research, thus affecting the trade behavior of investors with long positions. Chen (2016) finds that among Chinese cross-listed firms, activists are more likely to target firms with weaker corporate governance. He finds a negative market reaction upon the report publication for both targeted firms as well as their peers. Zhao (2018) examines ex-ante features that attract activists and implications for future returns. He shows that firms with ex-ante overvaluation characteristics experience significant negative returns following activists’ campaigns.

Most of these studies assume, and in part try to show, that activists’ reports are correct and thus the market should react to their publication. Ljungqvist and Qian (2016), for example, conclude that the vast majority of the reports are accurate. They draw this conclusion from the fact that, for more than 90% of the reports in their sample, at some point following the allegation,

a SCA was filed, the SEC/DoJ started an investigation, and/or the stock exchange took some sort of action. However, this argument blurs two concepts: 1) rationally following up on reports with potentially correct information and 2) the information indeed being correct. For example, dismissed SCAs should not be interpreted as validation of a report's accuracy. Thus, I conduct more powerful tests using outcomes from litigation and investigations, which are only preliminary steps.

3. Hypothesis development

3.1 Predictive ability of activists' fraud allegations

Prior studies show that passive short-sellers are sophisticated investors who can act as external monitors. Karpoff and Lou (2010) show a positive association between high abnormal short interest and months in which financial reports were manipulated. Further, Dyck et al. (2010) find that passive short-sellers, and to a lesser degree activists, identified some major fraud cases. Given these findings, and assuming that attributes from passive short-sellers generalize to activists, this could suggest that activists can identify fraud and thus their reports could be informative. As such, activists' fraud allegations could be highly predictive of accounting fraud. Further, litigation and reputation risks could help minimize the number of reports with unsubstantiated allegations. Activists can be sued and even if the probability of losing is low, litigation expenses can be high. Further, unsubstantiated allegations can hurt activists' reputation and affect future profits. Indeed, prior research finds that the market reacts less to activists with lower reputation (Ljungqvist and Qian 2016; Zhao 2018).

On the other hand, executives have long argued that many of activists' reports are inaccurate (Lamont 2012; Walker and Forbes 2013). These concerns are shared by regulators in the US and around the world (Shecter 2017). For example, false rumors were so widespread in

2008 that the SEC temporarily banned short-selling in financial institutions (SEC 2008). This could imply that many allegations are inaccurate and, as such, may have no predictive power. Further, after controlling for other commonly used measures in the accounting and finance literatures in predicting fraud, such as the F-score (Dechow et al. 2011), activists' fraud allegations may not provide incremental predictive power if activists mainly rely on these measures to identify their targets. I state hypothesis 1 in its alternative form:

H1: Activist short-sellers provide incremental predictive power over other commonly used fraud predictors in identifying firms committing accounting fraud.

3.2 Costs of unconfirmed fraud allegations to targeted firms

Unconfirmed fraud allegations may impose significant costs on targeted firms. These allegations may increase a firm's non-meritorious litigation risk for two reasons. First, attorneys may be unable to tell, ex-ante, which reports contain allegations that will be confirmed ex-post and thus follow up on even inaccurate reports. Second, even if they can distinguish, attorneys may still file a SCA. In deciding whether to file a SCA, lawyers consider the expected payoff of a case which is based on the probability of settling and the expected settlement amount (Donelson et al. 2018). Zhao (2018) finds a significant negative reaction to the release of fraud related reports which increases the maximum damages a lawyer can claim. Thus, the expected settlement amount, which is based on damages, is relatively high, and the case becomes attractive to lawyers even if the probability of settling is low (Donelson et al. 2018). As such, targeted firms may experience an increase in non-meritorious litigation risk. I state hypothesis 2a in its alternative form:

H2a: Unconfirmed fraud allegations increase targeted firms' non-meritorious litigation risk.

A perceived increase in litigation risk and the additional scrutiny of the firm's filings may result in higher audit fees. Prior research suggests that auditors' costs consist of 1) effort and resources required to complete the audit and 2) litigation risk (Simunic and Stein 1996). Prior studies indeed find that an increase in litigation risk increases audit fees (Choi et al. 2009; Badertscher et al. 2014; Abbott et al. 2017). However, most of these studies examine settings with a substantial increase in litigation risk, such as firms going public. It is unclear, ex-ante, whether the increase in litigation risk due to activists' allegations is of sufficient magnitude to result in higher audit fees. I state hypothesis 2b in its alternative form:

H2b: Unconfirmed fraud allegations increase targeted firms' audit fees.

These allegations may also distract executives and affect suppliers' and customers' perception of the firm, thus negatively impacting earnings. This is a common concern for non-meritorious litigation which resembles unconfirmed allegations (Choi 2004). However, these costs may be overstated. Donelson and Yust (2017) do not find any evidence of a decrease in earnings following SCA filings that are eventually dismissed. Moser (2018) also finds that sued firms with ex-ante high probability of having the SCA dismissed actually experience a decrease in cost of capital. This implies that firms facing uncorroborated allegations may not incur significant costs. Further, although specific expenses, such as audit fees, may increase, it is unclear whether earnings will be significantly affected given the relatively low amount of audit fees generally paid. I state hypothesis 2c in its alternative form:

H2c: Unconfirmed fraud allegations negatively impact targeted firms' earnings.

3.3 Overall impact on the legal system

The law literature has long recognized that the legal system has limited resources (e.g., limited number of federal judges) (Bernstein 1978; Fisch 2001). The growth in federal courts'

dockets has been outpacing judicial appointments (Bainbridge and Gulati 2002). To maximize efficient use of their time, judges are better served overseeing meritorious SCAs (Donelson et al. 2018). Fraud allegations by activists may help improve the system's efficiency. If activists' reports are mostly accurate, then SCAs raising allegations similar to those in activists' reports should be more likely to settle (i.e., have higher merits) compared to the remaining SCAs.

However, executives and regulators are concerned about "false rumors." These reports, as discussed in more detail in the prior section, may wrongly result in a SCA filing either because attorneys cannot distinguish between reports or because ex-ante they find it profitable to do so. As such, these reports may result in an inefficient use of the judicial system's resources. Ex-ante, it is unclear which of the two effects will dominate. Thus, I state hypothesis 3 in its null form:

H3: SCAs raising allegations similar to those of activists or that directly name activists in the complaint have similar merits to the average SCA and are thus just as likely to settle.

4. Sample

4.1 Fraud allegations

I use three sources to construct my sample of activists' fraud allegations. First, I collect activists' reports from Activist Insights (AI).³ This dataset contains reports from 98 activists up through December 31, 2015. AI classifies each report based on its primary allegation and contains 18 classifications. I use reports classified as *Accounting fraud*, *Major business fraud*, and *Misleading accounting*. To ensure that *Misleading accounting* reports allege intentional U.S. GAAP violations, I read the summaries provided by AI and remove cases not fitting this definition. Excluded reports usually allege that a firm strategically included/excluded certain items in calculating non-GAAP measures. After removing observations with missing data on

³ I would like to thank Wuyang Zhao for generously providing me access to his data.

Compustat and CRSP, the AI sample contains 148 fraud related reports for 106 campaigns.⁴

Second, I obtain “Short Ideas” articles from SeekingAlpha from February 13, 2006 (first published report) to December 31, 2015. The sample ends in 2015 to allow time for 1) investors to file a SCA and observe the outcome and 2) the SEC to bring a formal enforcement action. I identify 2,124 articles that include one of the following keywords: 1) “fraud,” 2) “mislead,” 3) “overstat,” and 4) “understat.” I exclude 940 articles for which the authors’ disclosure suggests they do not currently hold a short position in the company (Zhao 2018). I then read the remaining articles and keep those that indeed allege accounting fraud. Appendix 1 provides examples of articles included and excluded from the final sample. The final SeekingAlpha sample consists of 210 reports regarding 115 campaigns. There is an overlap between campaigns included in AI and SeekingAlpha. Overall, I identify 49 additional campaigns using SeekingAlpha.⁵

Finally, I search major activists’ websites. AI is more comprehensive beginning in 2011 and, until about 2010, SeekingAlpha was not widely used by these activists. I collect 29 additional reports and overall identify another four campaigns.

Panel A of Table 1 presents descriptive statistics regarding the sample composition. The final sample includes 159 campaigns. There is a fairly large number of activists (88) involved in these campaigns. Activists rarely initiate a second campaign against the same firm (only 8 such cases). Panel B of Table 1 presents the number of campaigns covered by activists. About 66% of the activists are involved in only one campaign. These are mainly smaller/less known activists publishing on SeekingAlpha. Importantly, about 19% of activists are involved in four or more campaigns. Thus, for some activists, identifying fraud appears to be an important task.

⁴ A campaign contains reports with similar allegations or reports published within a short period from each other.

⁵ Upon further examination, 13 of these campaigns are also in AI but are not classified as fraud cases. As such, I reclassify their designation in AI to fraud related and the total AI campaigns increase from 106 to 119.

4.2 Confirmed fraud allegations

I consider two measures in identifying whether a campaign contains confirmed allegations. First, for each campaign, I search Stanford Securities Class Action Clearinghouse to identify whether a SCA was filed against the firm after the initial fraud report. For each lawsuit, I read the complaint to ensure that the allegations raised are similar to those of activists. I consider campaigns with a settled SCA alleging a Section 10(b) violation of the Securities Exchange Act of 1934 or Rule 10b-5 violation to include confirmed allegations (Choi and Pritchard 2016).

Second, I examine whether the SEC issued an AAER with a Section 10(b) or Rule 10b-5 violation against the company following the release of the initial fraud report. To identify whether an AAER was brought against the firm, I first examine the Berkeley Center for Financial Reporting and Management (CFRM) database and then search the SEC's website.

Table 2 presents the total number of campaigns and number of campaigns with confirmed fraud allegations by year. The number of campaigns has been increasing over the sample period from three in 2006 to 24 in 2015. The campaigns are spread over the decade suggesting this was not an isolated phenomenon. Over the full sample, 30% of the campaigns contain confirmed allegations. Activists were the most accurate in 2010; 73% of the allegations have been confirmed. Activists' lowest accuracy was in 2015 with only 8% of the allegations being confirmed. As it may take several years for the SEC to bring formal enforcement and for a SCA to conclude, the accuracy rate for 2014 and 2015 is likely understated. There are currently five (one) on-going SCAs regarding 2015 (2014) allegations, so activists' accuracy will likely increase. Constraining the sample to campaigns through 2013, raises activists' accuracy to 36%.⁶

⁶ Inferences from multivariate analyses are similar if I constrain the sample to allegations made and SCAs filed by December 31, 2013 (untabulated).

5. Research Design and Empirical Findings

5.1 Predictive power of activist short-sellers' reports

5.1.1 Compustat population

To examine the predictive power of activists' fraud allegations, I estimate the following ordinary least square (OLS) regression for all firm-years with available data on Compustat and CRSP and fiscal years ending 2006-2015:⁷

$$\begin{aligned} \text{Conf. Fraud}_{i,t} = & \alpha_0 + \alpha_1 \text{Fraud Alleg.}_{i,[t+1, t+2]} + \alpha_2 \text{Abn. Short Int.}_{i,t} + \alpha_3 \text{F-score}_{i,t} \\ & + \alpha_4 \text{Mod. Jones}_{i,t} + \alpha_j \text{Controls}_{i,t} + \eta_j + \delta_k + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where i indexes firm and t indexes year. *Conf. Fraud* is an indicator variable set to one if firm i engaged in fraud, based on settled SCAs and AAERs, during year t and zero otherwise.

The variable of interest is *Fraud Alleg.*, which is an indicator variable set to one if an activist alleges, within 24 months following fiscal year end, that firm i committed fraud and zero otherwise. If the allegations predict accounting fraud, then α_1 should be positive and significant. In terms of other predictors, I include abnormal short interest (Karpoff and Lou 2010), the F-score by Dechow et al. (2011), and modified Jones discretionary accruals. As abnormal short interest is calculated at the monthly level, I include the average value for the year. *Controls* _{i,t} is a vector of control variables identified to be associated with fraud commission (Erickson et al. 2006; Lennox and Pittman 2010). I control for firm size (*Log MVE*), book to market (*Book-to-Market*), Big 4 auditor (*Big 4*), auditor tenure (*Tenure*), and M&A activity (*Acquisit.*). I also control for profitability (*ROA* and *Loss*) as poorly performing firms are more likely to cook their books and leverage (*Leverage* and *Financing Need*) as distressed firms have higher incentives to

⁷ I use a linear probability model given concerns of potential bias arising from fixed effects when using nonlinear models (Greene 2004) especially for equations (2) and (5) that have a small number of observations. Inferences are similar using a logit model (untabulated).

commit fraud.⁸ δ_k represents Fama-French 12 (FF12) industry fixed effects to control for industry-wide factors and η_j represents year fixed effects to control for time-specific factors.

5.1.2 Firms targeted by activists

Firms with weaker corporate governance (e.g., firms employing a non-Big 4 auditor or experiencing internal control weaknesses) are more likely to be targeted by activists (Chen 2016; Zhao 2018). Those characteristics, however, are also associated with fraud. Thus, it could be that it is not the fraud allegation per se that potentially predicts fraud, but rather those firm characteristics. This would imply that firms targeted by activists with *non-fraud allegations* are just as likely to be committing fraud. Such a finding would suggest that the market should scrutinize all targets and not only firms specifically targeted with accounting fraud allegations. Further, following the release of activists' reports, targeted firms receive high public scrutiny (Ljungqvist and Qian 2016). The additional scrutiny may help uncover *any* accounting fraud committed (i.e., even unrelated to the allegation). Thus, the predictive power may not stem from the allegation itself, but from the additional scrutiny.

To address these issues, I examine a sample of firms that have been targeted by activists either for 1) accounting fraud or 2) other reasons unrelated to accounting fraud (non-fraud allegations) such as overvaluation etc. I concentrate on campaigns included in AI to ensure that all allegations are made by prominent activists and thus attract market participants' attention. As activists may initiate multiple non-fraud campaigns against a firm, I only keep the first per fiscal year. If during a year, activists target a firm both with fraud and non-fraud allegations, I exclude the non-fraud campaign. After identifying firms at the campaign level, I then examine the two firm-years prior to the campaign (i.e., when the fraud was likely committed) and re-estimate

⁸ I do not control for governance characteristics as activists target small firms for which data is not easily accessible.

equation (1). If fraud allegations provide additional predictive power over and above simply being a target, then α_I should be positive and significant.

5.1.3 Results

Panel A of Table 3 presents descriptive statistics comparing years in which a firm is predicted of having engaged in accounting fraud based on activists' fraud allegations to the rest of Compustat population. Descriptively, accused firm-years are more likely to be fraudulent ($p < 0.01$). These firm-years also rank high on other variables predicting fraud such as abnormal short interest (*Abn. Short Int.*) and F-score (*F-score*) ($p < 0.01$). The short interest cannot be driven by the campaign itself as I examine years prior to the first allegation. In terms of other firm characteristics, these firms are more profitable (*ROA* and *Loss*), less levered (*Leverage*), more likely to be involved in M&A (*Acquisit.*), less likely to employ a Big 4 auditor (*Big 4*) and have a shorter auditor tenure (*Tenure*) ($p < 0.05$) consistent with prior findings (Chen 2016; Zhao 2018).

Panel B of Table 3 presents the correlation matrix. Firms with higher abnormal short interest and F-score are more likely to commit accounting fraud ($p < 0.01$). Interestingly, the correlation between *Fraud* and accruals (*Mod. Jones*) is low and significantly negative ($p < 0.05$). The remaining correlations are consistent with prior research; for example, larger firms, firms experiencing a loss year, making an acquisition, and employing a non-Big 4 auditor are more likely to commit fraud ($p < 0.10$) (Lennox and Pittman 2010).

Table 4 presents results from equation (1) examining the predictive power of activists' fraud allegations. Column 1 of Table 4 presents results using the Compustat population as the reference group. The coefficient of *Fraud Alleg.* is positive and significant ($p < 0.01$) suggesting that activists provide incremental predictive power over other commonly used fraud predictors in identifying firms committing fraud. The probability a firm has committed fraud increases by 22

percentage points if an activist alleges so. In contrast, a one standard deviation increase in abnormal short interest (F-score) increases the probability of a firm having committed fraud by 0.6 (0.5) percentage points ($p < 0.01$) (untabulated). Modified Jones discretionary accruals provide no additional predictive power.

To provide the other predictors their best chance to outperform activists, I replace the continuous variables with indicator variables set to one if the firm is ranked among the top 1% of that predictor in a given year. Thus, I classify as potentially fraudulent only the most egregious cases identified by each measure. Column 2 of Table 4 presents results. The coefficient of *Fraud Alleg.* remains positive and significant ($p < 0.01$). Further, the coefficient is significantly larger than the coefficients of the remaining predictors ($p < 0.01$). Thus, activists provide the most accurate signal that a firm has committed fraud.

Columns 3 and 4 of Table 4 present results from equation (1) using all campaigns, both fraud and non-fraud, covered by Activist Insights. The coefficient of *Fraud Alleg.* remains positive and significant under both specifications ($p < 0.01$) suggesting that fraud allegations provide incremental predictive power over and above simply being, in general, the target of an activist. The coefficients for the remaining predictors are mostly insignificant. Abnormal short interest is significant with an opposite than expected sign ($p < 0.10$).

Panel B of Table 4 presents information regarding precision and type II error rates. I compare firm-years flagged using activists' fraud allegations to firm-years identified using the extreme values (top 1%) of the other predictors. Activists' allegations have the highest precision rate and lowest type II error rate.⁹ If the SEC was to investigate firm-years flagged as potentially fraudulent based on extreme values of F-score (abnormal short interest), the agency would

⁹ In contrast to activists' allegations, type II errors for the other predictors can be decreased by relaxing the requirement of top 1% to top 5% or 10% etc. However, doing so will substantially decrease their precision rate.

identify 5 (7) fraudulent firm-years for every 100 investigated. On the other hand, the agency would identify 25 firm-years for every 100 investigated based on activists' allegations. Thus, in terms of resource allocation, regulators and investors are better off concentrating on activists' allegations. As such, activists' allegations represent the best source of fraud revelation.

5.2 Costs of unconfirmed fraud allegations to targeted firms

5.2.1 Reaction from the SEC and attorneys

Out of the 159 campaigns in my sample where activists alleged fraud, attorneys investigated whether to file a SCA or the SEC opened an investigation on 90 (57%) cases.¹⁰ After excluding cases for which no SCA was filed, the SEC investigated or attorneys actually filed a SCA for 69 (43%) campaigns. By the end, only 30% of the campaigns have a final decision that confirms fraud commission. Thus, lawyers and the SEC respond even to 'inaccurate' allegations suggesting that costs may be imposed on those firms.

5.2.2 Costs of unconfirmed fraud allegations

To examine costs imposed by unconfirmed fraud allegations, I switch from examining *firm-years* on Compustat to examining *all campaigns* covered by AI. I perform a difference-in-differences analysis and examine the two years prior to the two years following the initial report of each campaign. The control group consists of firms targeted by activists with non-fraud allegations (e.g., overvaluation). Thus, any differential change in non-meritorious litigation risk, audit fees, and earnings can be attributed to the fraud allegation.¹¹ I exclude confirmed fraud allegations as the primary interest in this section is costs imposed by unconfirmed allegations.

¹⁰ The disclosure of an SEC investigation is not mandatory (Stuart and Wilson 2009). Thus, the response rate may be understated. Further, it should be noted that in some cases the firm does not provide enough information as to what the SEC is investigating and thus a judgment call is needed to decide whether it relates to activists' allegations.

¹¹ Using any other group of firms as the control sample would allow for changes to be driven by the activist campaign rather than the fraud allegation.

To examine changes in non-meritorious litigation risk, I estimate the following OLS regression:

$$\text{Dism. SCA}_{i,t} = \beta_0 + \beta_1 \text{Post}_{i,t} + \beta_2 \text{Post} \times \text{Fraud Campaign}_{i,t} + \beta_j \text{Controls}_{i,t-1} + \theta_j + \eta_k + \varepsilon_{i,t} \quad (2)$$

Dism. SCA is an indicator variable set to one if firm *i* gets sued in year *t* and the SCA gets dismissed and zero otherwise. *Post* is an indicator variable set to one for the two years following each campaign and zero otherwise. The variable of interest is *Post x Fraud Campaign* which is an indicator variable set to one for the two years following an accounting fraud allegation and zero otherwise. If unconfirmed fraud allegations increase targeted firms' non-meritorious litigation risk, then β_2 should be positive and significant.

*Controls*_{*i,t-1*} represents a vector of control variables identified to affect litigation risk such as size (*Log MVE*), sales growth (*Sales Growth*), return (*Return*), return volatility (*Volatility*), and shares turnover (*Turnover*) (see Kim and Skinner 2012). Θ_j represents firm fixed effects and η_k represents year fixed effects. I also include *Fraud Campaign* as some firms are targeted both with fraud and non-fraud allegations. I do not control for high litigation risk industries (Francis et al. 1994) as the variable is subsumed by firm fixed effects.

To examine whether audit fees increase following unconfirmed fraud allegations, I estimate the following OLS regression:

$$\text{Log Fees}_{i,t} = \gamma_0 + \gamma_1 \text{Post}_{i,t} + \gamma_2 \text{Post} \times \text{Fraud Campaign}_{i,t} + \gamma_j \text{Controls}_{i,t} + \theta_j + \eta_k + \varepsilon_{i,t} \quad (3)$$

Log Fees represents the natural logarithm of audit fees. The variable of interest is *Post x Fraud Campaign*. If unconfirmed fraud allegations result in higher audit fees, then γ_2 should be positive and significant. *Controls*_{*i,t*} is a vector of controls identified to be associated with audit pricing (DeFond et al. 2002; Hribar et al. 2014; Keune et al. 2016). I control for firm complexity and audit risk by including controls for size (*Log MVE*), leverage (*Leverage*), current ratio (*CR*),

foreign operations (*For. Oper.*), profitability (*ROA* and *Loss*), M&A activity (*Acquisit.*), intangibles (*Intang.*), the ratio of receivables and inventory to total assets (*Inv. & Receiv.*), and cash flows (*CashFlow*). I also control for Big 4 (*Big 4*), auditor tenure (*Tenure*), and whether the firm did not receive a qualified opinion (*Opinion*) as other types require additional audit effort and thus higher audit fees. θ_j represents firm fixed effects and η_k represents year fixed effects.

Finally, to examine whether costs imposed by unconfirmed fraud allegations are large enough to affect overall firm performance, I estimate the following OLS regression:

$$\text{Earnings}_{i,t} = \zeta_0 + \zeta_1 \text{Post}_{i,t} + \zeta_2 \text{Post} \times \text{Fraud Campaign}_{i,t} + \zeta_j \text{Controls}_{i,t-1} + \theta_j + \eta_k + \varepsilon_{i,t} \quad (4)$$

Earnings represents income before extraordinary items scaled by total assets. If costs imposed by unconfirmed allegations are large enough to affect earnings, then ζ_2 should be negative and significant. *Controls*_{*i,t-1*} represents a vector of controls used by prior research (Donelson et al. 2018; Curtis et al. 2018). I control for prior year's earnings (*Earnings*) as earnings are persistent, negative earnings (*Loss*) as losses also tend to be persistent, M&A activity (*Acquisit.*) to control for expansion opportunities, leverage (*Leverage*) and SG&A (*SG&A*). θ_j represents firm fixed effects and η_k represents year fixed effects.

Table 5 compares changes for treated (i.e., firms targeted with unconfirmed fraud allegations) and control (i.e., firms targeted with non-fraud allegations) firms. Treated firms experience an increase in non-meritorious litigation risk ($p < 0.01$). Both groups experience an increase in audit fees ($p < 0.05$ for control; $p < 0.01$ for treated), but treated firms experience a greater increase ($p < 0.10$). Further, both groups experience insignificant changes in earnings ($p > 0.10$). In terms of controls, although both groups experience changes in several variables, the difference-in-differences changes are insignificant ($p > 0.10$) for all variables other than for *Acquisit.*_{*t-1*} for the earnings test, which increases more for treated firms ($p < 0.05$).

Table 6 presents results regarding costs imposed by unconfirmed fraud allegations on targeted firms. Columns 1 and 2 of Table 6 present results from equation (2) examining the effect of unconfirmed allegations on targeted firms' non-meritorious litigation risk. Column 1 presents results of a basic specification with only fixed effects and column 2 includes all control variables. The coefficient of *Post* is insignificant under both specifications suggesting that non-meritorious litigation risk does not change for the control firms. In contrast, the coefficient of *Post x Fraud Campaign* is positive and significant ($p < 0.01$) suggesting a 9 percentage point increase in non-meritorious litigation risk for firms targeted with unconfirmed fraud allegations.

Columns 3 and 4 of Table 6 present results from equation (3) examining the effect of unconfirmed fraud allegations on audit fees. Column 3 presents results with only fixed effects and column 4 includes all control variables. The coefficient of *Post* is insignificant under both specifications suggesting that audit fees do not increase for firms targeted with non-fraud allegations. However, the coefficient of *Post x Fraud Campaign* is positive and significant ($p < 0.01$) indicating that audit fees increase by about 21-22% for firms facing unconfirmed fraud allegations.¹²

Columns 5 and 6 of Table 6 present results from equation (4) examining the effect of unconfirmed allegations on targeted firms' earnings. Column 5 presents results with only fixed effects and column 6 includes all control variables. The coefficients of *Post x Fraud Campaign* is insignificant ($p > 0.10$) and thus fail to reject the null that activists' unconfirmed fraud allegations do not affect a firm's profitability. Therefore, while unconfirmed fraud allegations do impose certain costs, the costs are not significant enough to affect earnings.

The central assumption to a causal interpretation from the difference-in-differences

¹² Calculated as $100(\exp(0.20)-1)$ and $100(\exp(0.19)-1)$.

analyses is that the treated and control groups shared parallel trends prior to the campaigns. To provide evidence that the parallel trend assumption is valid, Figure 1 depicts the counterfactual treatment effect on a yearly basis relative to the allegation. If the parallel trend assumption is valid, then the treatment effect should be close to zero in the pre-period and experience a change in the post-period (see Christensen et al. 2017). I use the first year prior to the allegation as the benchmark year against which the remaining yearly effects are compared. The figures suggest that the increase in non-meritorious litigation risk and audit fees takes place following the campaigns. For completeness, I also plot earnings. While the increase in audit fees lasts for at least two years (Figure 1b), the increase in non-meritorious litigation risk is concentrated in year 1 (Figure 1a). Table 6 and Figure 1 present results consistent with firms facing some costs due to unconfirmed fraud allegations, but these costs are not large enough to affect earnings.

5.3 Overall impact on the legal system

To study the impact of activists' fraud allegations on the legal system, I examine SCAs filed between 2006 and 2015 and estimate the following OLS regression:

$$SCA\ Outcome_i = \lambda_0 + \lambda_1\ Activist\ Case_i + \lambda_j\ Controls_i + \eta_j + \delta_k + \varepsilon_i \quad (5)$$

SCA Outcome represents one of the following three variables. First, I examine whether a case settles (*Settled*). Second, I examine whether a case settles for more than \$1M (*Settled (> \$1M)*) as cases settling for less may be nuisance cases (Skinner 1997; Choi et al. 2009; Dyck et al. 2010).¹³ Third, I examine settlement amounts (*Log Settlement*).

Activist Case is an indicator variable set to one if the complaint contains allegations

¹³ Skinner (1997) used \$1M, Choi et al. (2009) used \$2M, and Dyck et al. (2010) used \$3M. I use \$1M given that many allegations are against smaller firms and settlements larger than \$1M should be significant to them. An alternative would be to use a cut-off based on the ratio of settlement amount relative to the market value of the firm. Choi et al. (2009) use 0.5% of market cap measured 10 days prior to class period end. Rather than using market cap prior to fraud period end (at which point the firm was overvalued), I use market value just after class period end which better captures the true size of the firm. Inferences remain similar (untabulated).

similar to the ones raised by the activist or specifically names the activist in the complaint and zero otherwise.¹⁴ If these cases are more meritorious, relative to the population of SCAs, then λ_l should be positive and significant. However, if these cases have lower merits due to false allegations, then λ_l should be negative and significant. $Controls_i$ represents a vector of control variables regarding case merits (Donelson et al. 2018). Among others, I control for maximum potential damages (*Maximum Damages*), restatements (*Restatement*), law firm quality (*Top 5 Law Firm*), and SEC enforcement actions (*SEC Enforcement*). δ_k represents FF12 industry fixed effects and η_j represents year fixed effects.

Table 7 presents results from equation (5). The coefficient of *Activist Case* is positive and significant under all specifications ($p < 0.05$) suggesting that these cases have a 19 (22) percentage point higher probability of settling (for over \$1M) and receive larger settlements. Thus, from the legal system's perspective, activists' allegations improve resource allocation.

Table 7 shows that activists' allegations improve the legal system's efficacy, while Table 6 finds that firms facing unconfirmed allegations experience an increase in non-meritorious litigation risk. The key distinction is that the analysis for Table 7 is conditioned on a SCA being filed. Overall, 70% of activists' fraud campaigns contain unconfirmed allegations, and 14% of those firms later face a SCA that gets dismissed. Based on Compustat population, the probability that a firm will face a non-meritorious SCA in a given year is less than 1% (untabulated). Thus, unconfirmed fraud allegations increase non-meritorious litigation risk. However, conditioned on a SCA filing, there are 62 activists' campaigns for which a SCA with allegations similar to those

¹⁴ Although the fraud sample used in this study should be quite comprehensive in identifying SCAs including allegations similar to those of activists, it is possible it misses some. As such, I perform textual analysis for cases listed on Stanford Securities Class Action Clearinghouse and identify SCAs naming major activists in the complaint. I then read the relevant cases and if the activist's allegation is accounting related, I reclassify the SCA to be activist related (i.e., *Activist Case* is set to one). I identify six such cases. Three cases settled and three were dismissed.

of activists is later filed and 43 (69%) settle. On average, only 60% of the remaining SCAs settle. Thus, SCAs with allegations similar to those of activists are more likely to settle.

6. Additional Analysis

6.1 Market Reaction

Thus far, the paper has examined the predictive power of activists' fraud allegations, costs of unconfirmed allegations to targeted firms, and the overall effect of activists' allegations on the legal system. In this section, I examine shareholders' reaction. One would expect a negative market reaction to the release of these reports, but the extent of the reaction and for how long the negative reaction lasts for firms facing unconfirmed fraud allegations is unclear. To examine market reaction, I concentrate on all *reports* included in AI (i.e., not simply the initial report of each campaign) as reports from different activists may further affect the market.

Figure 2 presents buy-and-hold abnormal returns (*BHAR*) for the 252-trading days following the report release day. Figure 2a (2b) compares reports with confirmed fraud allegations (non-fraud allegations) to reports with unconfirmed fraud allegations. The shaded area around each line represents a 95 percent confidence interval.

Concentrating on days 0 and 1 following the publication of the reports, the *BHAR* for reports containing unconfirmed allegations is -5.8% (untabulated). This implies that an investor buying shares just prior to the release of these reports and selling the following day, as a result of the allegations, experiences significant losses. The *BHAR* for reports containing non-fraud allegations (confirmed fraud allegations) is -4.7% (-12.8%) (untabulated). The returns for unconfirmed fraud allegations and non-fraud allegations are not statistically different ($p > 0.10$), while returns for confirmed fraud allegations are significantly more negative than both other types of reports ($p < 0.01$) (untabulated). Thus, the market reacts negatively to all reports, as

expected, but reacts stronger to reports containing confirmed fraud allegations.

In terms of long-window returns, reports containing confirmed fraud allegations continue to exhibit the most negative BHARs throughout the period. Similarly, reports containing non-fraud allegations exhibit negative returns over the whole period. However, the pattern differs for reports containing unconfirmed fraud allegations. The market continues to react negatively to those reports over the following 60 days at which point the price starts to recover. By day 88 the BHAR is indifferent from 0 ($p < 0.05$) and by the end of the period reports containing unconfirmed fraud allegations exhibit the highest returns, relative to reports containing non-fraud and confirmed fraud allegations ($p < 0.05$) (untabulated). Inferences for the 2-day and 252-day BHARs remain the same in a multivariate analysis controlling for firm size, volatility prior to the allegation, analyst coverage, book-to-market, and year and industry fixed effects (untabulated).

Although the BHAR pattern in the short-run is similar for reports containing unconfirmed fraud allegations and non-fraud allegations, changes in information asymmetry may vary across the two groups. To examine information asymmetry, I estimate the following OLS regression:

$$\Delta\text{Spread}_i = \mu_0 + \mu_1 \text{Fraud Report}_i + \mu_j \text{Controls}_i + \delta_k + \eta_j + \varepsilon_i \quad (6)$$

ΔSpread is the average spread for a given window following the fraud allegation less the average spread for a similar window prior to the allegation (Lee 2016). I examine four windows (20-, 40-, 90-, and 180-trading days post-report publication). *Fraud Report* is an indicator variable set to one if the report contains unconfirmed fraud allegations and zero if it contains non-fraud allegations. I control for size (*Log MVE 1*), turnover (*Turnover 1*), price (*Log Price*), and return volatility (*Volatility 1*), all calculated on the last trading day prior to the report's publication as well as book to market (*Book-to-Market*) as of the most recent fiscal year end. δ_k represents FF12 industry fixed effects and η_j represents year fixed effects.

Table 8 presents results from equation (6). Firms targeted with unconfirmed fraud allegations experience a larger change in bid-ask spread relative to firms targeted with non-fraud allegations for the 20-, 40-, and 90-trading day windows ($p < 0.10$), but not for the 180-trading day window. This suggests a temporary increase in information asymmetry. Overall this section shows that unconfirmed fraud allegations temporarily distort capital markets.

6.2 Fraud committed by firms listed in the US through reverse mergers

Over the prior decade, many Chinese firms listed in the US through a reverse merger (RM firms) engaged in accounting fraud. In response, in 2011, the SEC warned investors against investing in these firms (Lee et al. 2015). Activists were credited for exposing many of these frauds (Lee et al. 2015; Chen 2016). About 31% of the campaigns in my sample are against RM firms. This wave of fraud cases, however, represents a setting that may not generalize to other settings for two reasons. First, it is unlikely that a similar fraud will re-occur as the public and the SEC are now aware of risk associated with these firms. Second, some methods employed to uncover these frauds cannot be easily adopted to other settings. In addition to comparing ratios to peer firms, activists compared SEC to SAIC filings (filings with the Chinese authorities) and visited physical locations to verify plant existence and production levels. A more ‘traditional’ accounting fraud cannot be detected in such a way. In this section, I examine whether inferences from the prior analyses are driven by campaigns against RM firms. I modify equations (1)-(6) to distinguish between fraud allegations made against RM and traditional firms.

Table 9 descriptively examines whether attorneys and the SEC reacted differently to fraud allegations against RM (Panel A) and traditional (Panel B) firms as well as differences in accuracy rates. Out of 50 campaigns against RM firms, attorneys evaluated whether to file a SCA or the SEC investigated 36 and 24 (48%) campaigns have been confirmed. However, only

22% of campaigns against traditional firms have been confirmed. A mean difference test indicates that cases against RM firms were more likely to be confirmed ($p < 0.01$).

Panel A of Table 10 presents results from modified equation (1). Under all specifications, activists provide the strongest signal that a firm has committed fraud both for traditional and reverse merger firms ($p < 0.01$). The coefficient for fraud allegations against RM firms is statistically larger for all columns ($p < 0.10$), except column 3 ($p = 0.105$). However, this is driven by cases being excluded due to missing data for other predictive variables. In untabulated analysis, I note that estimating modified equation (1) without including the other predictors results in allegations against RM firms having significantly higher predictive power ($p < 0.01$).

Panel B of Table 10 presents results from modified equations (2)-(4) examining costs from unconfirmed fraud allegations. Column 1 examines changes in non-meritorious litigation risk and indicates that it increases by 11 percentage points for traditional firms ($p < 0.01$). Column 2 examines audit fees and indicates that both groups of firms facing unconfirmed fraud allegations experience an increase in audit fees ($p < 0.10$) of a statistically similar magnitude (untabulated). Column 3 examines the effect on earnings. Both coefficients of interest are insignificant suggesting that costs incurred from these allegations are not large enough to impact the profitability of either group of firms.

Panel C of Table 10 presents results from modified equation (5). The results suggest that activists' allegations against RM firms helped increase the legal system's efficacy as those cases were more likely to settle ($p < 0.01$). In contrast, *Activist Case – Traditional* is insignificant under all specifications ($p > 0.10$). Panel D of Table 10 presents results from modified equation (6) examining changes in information asymmetry. The results suggest that information asymmetry increases only for traditional firms (*Fraud Report – Traditional*) for the 20- and 40-

day window following the release of activists' reports ($p < 0.05$).

Overall, Tables 9 and 10 show that results from prior analyses are for the most part not driven by allegations against RM firms. However, activists were better at identifying fraud committed by reverse mergers, while the costs from unconfirmed allegations appear to be larger for traditionally listed firms.

6.3 Accuracy rates in prior studies

The results of this paper to some extent contradict findings of prior studies. For instance, Ljungqvist and Qian (2016) note "Investigation by regulators such as the SEC or the DoJ or by an exchange back up the reports in fully 90% of the cases" (p. 2008).¹⁵ The difference is attributed to different design choices and interpretations of findings.

First, concentrating on SEC actions and SCAs, I consider a campaign to contain confirmed allegations if the SCA settles or the SEC issues an AAER. Ljungqvist and Qian (2016), however, also consider SEC investigations that do not result in an AAER and dismissed SCAs. Nevertheless, there is a difference between a) *rationaly following up* on a report and b) *confirming* the allegations in the report. Activists are good at identifying fraud, so it is rational for the SEC to follow up on these allegations. However, investigations that do not result in the issuance of an AAER cannot be considered events confirming the allegations.

Second, a firm can be sued or face an SEC enforcement action for reasons unrelated to those raised by activists. In this study, I ensure that the allegations are similar. However, Ljungqvist and Qian (2016) appear to consider all subsequent investigations and lawsuits as confirmatory events. As per Table 7 of Ljungqvist and Qian (2016), the lag between the initial report and the 'confirmatory' action is 845 days at the 75th percentile for "Class-action lawsuit".

¹⁵ The sample composition of the two studies differ. Ljungqvist and Qian (2016) include all activists' campaigns and not only cases alleging accounting fraud and include reports issued between July 2006 and December 2011.

It is unclear whether the allegations in these SCAs are similar to those raised by activists.

Third, I do not consider delistings as confirming activists' reports. In my sample, there are 84 firms that eventually delist following the allegation. Out of those delistings, only 34 overlap with the confirmed fraud sample. Table 11 tabulates the reasons for the delisting as provided by CRSP for unconfirmed allegations. Out of the 50 campaigns, 27 do so due to M&A activity. Another five firms get delisted at least three years after the initial report because the company: a) went bankrupt, b) requested to get delisted, or c) had insufficient capital. The long gap, without any further examination, makes it difficult to assess the accuracy of activists' allegations. The category that potentially suggests fraud is *Protection of Investors*. For these cases, the exchange delists the firm because of concerns that the firm is defrauding the public. There are three such cases. Attorneys or the SEC followed up on all three; a SCA was filed for two, but later got dismissed. Table 11 suggests that overall these cases do not look like fraud.

6.4 Restatements

Several papers include restatements as a proxy for fraud (Desai et al. 2006a; Hobson et al. 2012; Masulis et al. 2012). Although restatements represent violations of U.S. GAAP, they are not indicative of fraud as they do not require the element of intent. However, it is possible that activists identify GAAP violations, but wrongly conclude fraud. I identify 22 major restatements (see Tan and Young 2015) for which the reasoning for the restatement is similar to activists' allegations. Out of the 22 campaigns, 16 are classified as confirmed fraud cases. From the remaining campaigns, attorneys or the SEC evaluated two, but in the end the allegations were not verified. There is one on-going SCA. Thus, most restatements are already identified as confirmed cases, but potential exaggerations impose costs on some of these firms.

7. Conclusion

This paper examines the predictive power of activists' accounting fraud allegations and costs imposed by unconfirmed allegations. Activists provide the most accurate signal that a firm has committed fraud. However, many of the allegations (about 70%) are not later confirmed. These unconfirmed allegations impose costs on targeted firms as they increase non-meritorious litigation risk and audit fees, but the costs are not large enough to impact profitability. In examining the effect of activists' fraud allegations on the legal system, I find that these cases are more likely to settle. Unconfirmed fraud allegations temporarily negatively affect capital markets as they depress prices and increase information asymmetry. Activists were more accurate with allegations made against firms listed in the US through a reverse merger, whereas the costs are mainly concentrated on traditionally listed firms.

This study contributes to the stream of literature examining short-sellers as external corporate governance mechanisms. The study shows that activists, although quite accurate in their allegations, also make a lot of 'inaccurate' allegations which impose some costs on targeted firms and those firms' shareholders. The findings validate executives' concerns that many of the allegations are inaccurate. Further, the findings suggest that a type of external monitor which, in the past, did not participate in uncovering fraud, has recently become a very important source of fraud identification. The results should be of interest to regulators who are concerned with false rumors spreading the market.

Appendix 1: Examples of articles included and excluded from the SeekingAlpha sample

To construct the SeekingAlpha sample, I first obtain all “Short Ideas” articles from SeekingAlpha for the period February 13, 2006 to December 31, 2015. I identify articles including one of the following keywords: 1) “fraud”, 2) “mislead”, 3) “overstat”, and 4) “understat.” I exclude articles for which the authors’ disclosures suggest that they do not currently hold a short position. I read the remaining articles to verify that the authors indeed allege fraud and that the articles are not simply summarizing recent events. Below I include an example of an article excluded and an article included in the final sample.


Excluded




The following report was excluded from the final sample as it refers to a SCA that has already been filed and as such does not bring any new information to the market, but rather simply summarizes recent events.

Why Green Mountain Coffee Roasters Is a Good Short


Nov. 16, 2010 4:46 PM ET | 85 comments | About: Keurig Green Mountain Inc (GMCR)

This article is now exclusive for PRO subscribers.



Tom Guttenberger   

Value (93 followers)

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Green Mountain Coffee faces more significant headwinds than rising coffee prices. In a past article, <https://seekingalpha.com/article/224931-why-it-s-a-great-time-to-short-starbucks>, I made the case for rising commodity prices and weakness of the domestic consumer being good reasons to short Starbucks. I am willing to admit that I was wrong in that case (or maybe early), but the some of the same arguments can be applied to GMCR, and I stand behind the rationale I was using. In this instance though there are significant catalysts behind a more immediate downward move.

1. A class action securities fraud lawsuit has been filed against the company -

Here is the news headline:

NEW YORK, NY, Nov. 16, 2010 (MARKETWIRE) - COMTEVA, A I

Appendix 1 (Continued)

Included



The following article was included in the final sample as the activist releases new information to the market alleging that Amira Nature Foods is “fabricating its SEC financial statements.”

Amira Nature Foods: The Short Case Redux, Price Target \$0.00/Share

Jul. 31, 2015 6:45 AM ET | 29 comments | About: Amira Nature Foods (ANFI)

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Summary

- In this report, we release new evidence that reinforces our short thesis that ANFI is fabricating its SEC financial statements and that its financial condition is unraveling.
- Amira has yet to file its audited financials for FYE March '15 with the SEC, presumably due to heightened scrutiny of the company's accounts by its auditor, Deloitte.
- Deloitte should find useful the interview transcripts provided, in which several former Amira insiders either aired their concerns or told how to unearth malfeasance at the company.
- The recent plunge in Basmati and paddy prices has reduced Amira's credit availability, potentially resulting in a liquidity crunch and heightening the risk of bankruptcy.
- We believe Amira is hoodwinking investors and has no intention of providing a return to shareholders; we think ANFI stock is worth \$0.00/share and should be de-listed from the NYSE.

Appendix 2: Variable Definition

| Variable | Definition |
|-------------------------------|--|
| Variables of Interest: | |
| Activist Case | = The variable is used in examining the impact of activists' fraud allegations on the legal system and as such it is defined at the <i>SCA level</i> . The variable is an indicator set to one if the SCA complaint contains allegations similar to those made by the activist or specifically names the activist; zero otherwise. |
| Fraud Alleg. | = The variable is used in examining the predictive power of activists' fraud allegations and as such it is defined at the <i>firm-year level</i> . The variable is an indicator set to one if, over the 24 months following fiscal year end, an activist accuses the firm of committing accounting fraud; zero otherwise. |
| Fraud Campaign | = The variable is used in examining costs of <i>unconfirmed</i> fraud allegations on targeted firms and as such it is defined at the <i>campaign level</i> . The variable is an indicator set to one if the activist's campaign contains accounting fraud allegations that are not later confirmed by the court or the SEC; zero otherwise. |
| Fraud Report | = The variable is used in examining changes in bid-ask spread following the release of an activist's report and as such it is defined at the <i>report level</i> . The variable is an indicator set to one if the activist's report contains accounting fraud allegations that are not later confirmed by the court or the SEC; zero otherwise. |
| Post | = The variable is used in examining costs of unconfirmed fraud allegations on targeted firms and as such it is defined at the <i>campaign level</i> . The variable is an indicator set to one for the two fiscal years following an activist's campaign. |
| *- RM | = The * represents one of the following variables <i>Activist Case</i> , <i>Fraud Alleg.</i> , <i>Fraud Campaign</i> , or <i>Fraud Report</i> . For the * variable to be set to one, the targeted firm needs to have been listed in the US through a reverse merger. I use two sources to identify RM firms. First, I read 8-Ks including item 5.06 (Change in Shell Company Status) to identify whether it relates to a non-US reverse merger. Then, I supplement this list with Chinese reverse mergers identified by Bloomberg. |
| *- Traditional | = The * represents one of the following variables <i>Activist Case</i> , <i>Fraud Alleg.</i> , <i>Fraud Campaign</i> , or <i>Fraud Report</i> . For the * variable to be set to one, the targeted firm must have not been listed in the US through a reverse merger. |
| Dependent Variables: | |
| Conf. Fraud | = An indicator variable set to one if the firm engaged in accounting fraud during the year. Fraud is defined using settled SCAs and AAERs with a Section 10(b) or Rule 10b-5 violation. |
| Dism. SCA | = An indicator variable set to one if the SCA was dismissed; zero otherwise. |
| Earnings | = Earnings before extraordinary items scaled by total assets. |
| Log Fees | = The natural logarithm of audit fees for the year. |
| Log Settlement | = The natural logarithm of one plus the SCA settlement amount. The settlement amount for dismissed cases is set to zero. |
| Settled | = An indicator variable set to one if the SCA settles; zero otherwise. |

Appendix 2 (Continued)

- Settled (>\$1M) = An indicator variable set to one if the SCA settles for more than \$1M; zero otherwise.
- Δ Spread = The change in average bid-ask spread (scaled by the midpoint of bid-ask spread) for a given window prior to the allegation to a similar window following the initial report in each campaign.

Control Variables

- Abn. Short Interest = Model 1 of Abnormal Short Interest as per Karpoff and Lou (2010). More specifically, for each month I estimate the following OLS regression:

$$SI_{it} = \sum_{g=low}^{Medium} s_{gt}Size_{igt} + \sum_{g=low}^{Medium} b_{gt}BM_{igt} + \sum_{g=low}^{Medium} m_{gt}Mom_{igt} + \sum_{k=1}^K \phi_{kt}Ind_{ikt} + u_{it}$$

Size refers to market value of equity, BM to book-to-market and Mom to momentum (3-month window) and are calculated as of the beginning of the month. Each variable is then sorted into terciles. Ind represents 2-digit SIC fixed effects. The residual represents the abnormal short interest. As this is calculated at the monthly level, I use the average value of the whole year in the yearly analysis.

- Acquisit. = An indicator variable set to one if the firm made any acquisitions during the year that contributed to sales; zero otherwise.
- Auditor Switch = An indicator variable set to one if the firm changed auditor during the year; zero otherwise.
- Big 4 = An indicator variable set to one if the firm employs a Big 4 auditor; zero otherwise.
- Book-to-Market = The book value of equity over market value of equity.
- CashFlow = Cash flow from operating activities over total assets.
- CAR = Market-adjusted return, defined as the cumulative return measured over the fiscal year less the value-weighted market return over the same period.
- CR = Current ratio defined as current assets over current liabilities.
- Financing Need = An indicator variable set to one if cash flows from operations less capital expenditures scaled by current assets is less than -0.5; zero otherwise.
- For. Oper. = An indicator variable set to one if the firm has sales abroad; zero otherwise. I use foreign taxes (txtfo per compustat) as a proxy.
- F-score = Model 1 of F-score as per Dechow et al. (2011).
- Intang. = Total value of intangible assets over total assets.
- Institutional Ownership = Institutional ownership as of fiscal year end.
- Inv. & Receiv. = Inventory and total receivables over total assets.
- Leverage = Total long-term and short-term debt over total assets. Missing values of each measure are replaced with zero.
- Log Analysts = The natural logarithm of one plus the number of analysts issuing annual forecasts.
- Log MVE = The natural logarithm of market value of equity as of fiscal year end.

Appendix 2 (Continued)

| | | |
|------------------------------|---|--|
| Log MVE 1 | = | The natural logarithm of market value of equity as of the last trading day prior to the release of the activist's report. |
| Log Price | = | The natural logarithm of price as of the last trading day prior to the release of the activist's report. |
| Loss | = | An indicator variable set to one if the firm had negative net income during the year; zero otherwise. |
| Maximum Damages | = | The natural logarithm of estimated potential damages based on the total decline in market value of equity from the highest value during the class period to the trading day after class period end. If a price cannot be obtained following class period end, then the price is set equal to zero. |
| Mod. Jones | = | Modified Jones discretionary accruals calculated at the 2-digit SIC code and year level. I require at least 15 observations per industry-year. |
| Opinion | = | An indicator variable set to one if current year's financial statements did not receive a qualified opinion; zero otherwise. |
| Restatement | = | An indicator variable set to one if any of the financial statements in the alleged fraud period have been restated; zero otherwise. |
| ROA | = | Net income over total assets. |
| Sales Growth | = | Net sales in current year minus net sales in prior year, divided by prior year's total assets. |
| SG&A | = | SG&A expense during the year over total assets. Missing values are replaced with zero. |
| SEC Enforcement | = | An indicator variable set to one if the firm received an AAER regarding any of the quarters included in the SCA class period; zero otherwise. |
| Skewness | = | Skewness of monthly raw returns during the fiscal year. |
| Tenure | = | The natural logarithm of 1 plus the number of years the current auditor has been auditing the firm's financial statements. |
| TobinsQ | = | The sum of the market value of common stock, preferred stock and firm debt scaled by total assets. Preferred stock and debt are assumed to have a market value equal to book value. |
| Top 1% - Abn. Short Interest | = | An indicator variable set to one if during the year the firm was ranked in the top 1% of firms with the highest <i>Abn. Short Interest</i> ; zero otherwise. |
| Top 1% - F-score | = | An indicator variable set to one if during the year the firm was ranked in the top 1% of firms with the highest <i>F-score</i> ; zero otherwise. |
| Top 1% - Mod. Jones | = | An indicator variable set to one if during the year the firm was ranked in the top 1% of firms with the highest <i>Mod. Jones</i> ; zero otherwise. |
| Top 5 Law Firm | = | An indicator variable set to one if a top five firm (and their successors) in the post-PSLRA era, as identified by Choi and Thompson (2006), are involved in the SCA; zero otherwise. |
| Turnover | = | Monthly share turnover [trading volume/shares outstanding] measured over the fiscal year, scaled by 1,000 for readability. |
| Turnover 1 | = | Share turnover [trading volume/shares outstanding] as of the last trading day prior to the initial report in each campaign. |
| Volatility | = | Standard deviation of monthly raw returns during the fiscal year. |
| Volatility 1 | = | Standard deviation of monthly raw returns over the 12-month period prior to the release of the activist's report. |

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Table 1: Descriptive statistics: Accounting fraud allegations by activists

Panel A presents descriptive statistics regarding sample composition. The sample consists of accounting fraud allegations by activist short-sellers for the period 2006 to 2015. Fraud allegations have been identified using: 1) Activist Insights, 2) SeekingAlpha, and 3) major activists' websites. **Panel B** presents descriptive statistics regarding the total number of campaigns individual activists participate in.

Panel A: Sample Composition

| | N |
|------------------------------------|-----|
| Unique campaigns by activists | 159 |
| Unique firms targeted by activists | 151 |
| Unique activists | 88 |

Panel B: Number of campaigns covered

| # of Campaigns Covered: | # Activists | Total # of Campaigns Covered |
|-------------------------|-------------|------------------------------|
| 1 | 58 | 58 |
| 2 | 9 | 18 |
| 3 | 4 | 12 |
| 4 or More | 17 | 135 |
| | <u>88</u> | |

Table 2: Frequency of confirmed fraud allegations

This table tabulates the number of activists' accounting fraud campaigns identified per calendar year (*Total Campaigns*), the number of campaigns with confirmed fraud allegations (*Frequency of Confirmed Allegations*), and the percent of cases with confirmed allegations (%). A campaign is classified as containing confirmed allegations if subsequently there was a settled securities class action (SCA) with a Rule 10b-5/Section 10(b) violation or an AAER with a Rule 10b-5/Section 10(b) violation and the SCA/AAER contains allegations similar to those alleged by the activist (or directly refers to them).

| Year | Total Campaigns | Frequency of Confirmed Allegations | % |
|-------------|------------------------|---|----------|
| 2006 | 3 | 2 | 67% |
| 2007 | 3 | 1 | 33% |
| 2008 | 7 | 3 | 43% |
| 2009 | 6 | 1 | 17% |
| 2010 | 15 | 11 | 73% |
| 2011 | 43 | 16 | 37% |
| 2012 | 13 | 2 | 15% |
| 2013 | 22 | 4 | 18% |
| 2014 | 23 | 6 | 26% |
| 2015 | 24 | 2 | 8% |
| Overall | 159 | 48 | 30% |

Table 3: Predictive power - Descriptive statistics

Panel A presents descriptive statistics for the main variables used in the analyses examining the predictive power of activists' fraud allegations. The sample includes all firm-years, for the period 2006-2015, with available data on Compustat and CRSP. *Fraud Alleg.* is an indicator variable set to one if over the 24 months following fiscal year end, an activist accuses the firm of committing accounting fraud. Bolded values indicate statistical significance at the 10 percent level. **Panel B** presents Pearson correlations. Bolded values indicate statistical significance at 5 percent level. To minimize the influence of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variables are defined in Appendix 2.

Panel A: Descriptive statistics

| | Fraud Alleg. = 0 | | Fraud Alleg. = 1 | | Diff. |
|-----------------|------------------|--------|------------------|-------|---------------|
| | Firm-Years | Mean | Firm-Years | Mean | |
| Conf. Fraud | 34,522 | 0.014 | 198 | 0.247 | 0.233 |
| Abn. Short Int. | 34,522 | -0.002 | 198 | 0.026 | 0.028 |
| F-score | 34,522 | 0.915 | 198 | 1.250 | 0.335 |
| Mod. Jones | 34,522 | 0.179 | 198 | 0.183 | 0.004 |
| Log MVE | 34,522 | 6.390 | 198 | 6.271 | -0.119 |
| Book-to-Market | 34,522 | 0.608 | 198 | 0.544 | -0.064 |
| ROA | 34,522 | -0.038 | 198 | 0.025 | 0.063 |
| Loss | 34,522 | 0.339 | 198 | 0.268 | -0.071 |
| Leverage | 34,522 | 0.215 | 198 | 0.151 | -0.064 |
| Financing Need | 34,522 | 0.096 | 198 | 0.091 | -0.005 |
| Big 4 | 34,522 | 0.742 | 198 | 0.515 | -0.227 |
| Tenure | 34,522 | 1.959 | 198 | 1.456 | -0.503 |
| Acquisit. | 34,522 | 0.383 | 198 | 0.465 | 0.082 |

Table 3 (Continued)**Panel B: Pearson correlations**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|-------------|-------------|
| (1) Conf. Fraud | 1 | | | | | | | | | | | | |
| (2) Fraud Alleg. | 0.14 | 1 | | | | | | | | | | | |
| (3) Abn. Short Int. | 0.06 | 0.04 | 1 | | | | | | | | | | |
| (4) F-score | 0.05 | 0.04 | 0.00 | 1 | | | | | | | | | |
| (5) Mod. Jones | -0.01 | 0.00 | -0.04 | -0.01 | 1 | | | | | | | | |
| (6) Log MVE | 0.01 | 0.00 | 0.00 | 0.09 | 0.05 | 1 | | | | | | | |
| (7) Book-to-Market | 0.00 | -0.01 | -0.05 | -0.09 | -0.03 | -0.27 | 1 | | | | | | |
| (8) ROA | 0.00 | 0.02 | -0.06 | 0.08 | 0.11 | 0.39 | 0.04 | 1 | | | | | |
| (9) Loss | 0.02 | -0.01 | 0.09 | -0.11 | -0.07 | -0.43 | 0.10 | -0.61 | 1 | | | | |
| (10) Leverage | -0.02 | -0.02 | 0.04 | 0.01 | -0.04 | 0.12 | -0.12 | -0.07 | 0.05 | 1 | | | |
| (11) Financing Need | 0.00 | 0.00 | 0.04 | -0.08 | 0.02 | -0.19 | -0.02 | -0.49 | 0.31 | 0.11 | 1 | | |
| (12) Big 4 | -0.01 | -0.04 | 0.06 | 0.01 | -0.01 | 0.52 | -0.12 | 0.17 | -0.17 | 0.12 | -0.12 | 1 | |
| (13) Tenure | -0.04 | -0.04 | 0.02 | 0.00 | 0.02 | 0.30 | -0.08 | 0.14 | -0.17 | 0.03 | -0.11 | 0.32 | 1 |
| (14) Acquisit. | 0.02 | 0.01 | -0.03 | 0.29 | -0.01 | 0.28 | -0.06 | 0.17 | -0.18 | 0.06 | -0.18 | 0.17 | 0.10 |

Table 4: Predictive power of fraud allegations by activist short-sellers

Panel A presents results from equation (1) examining the predictive power of activists' fraud allegations. Columns (1) and (2) present results examining all firm-years, for the period 2006-2015, with available data on Compustat and CRSP. Columns (3) and (4) focus on *all* campaigns covered by Activist Insights and examine whether the fraud allegations provide additional predictive power over and above simply being the target of an activist. **Panel B** presents information regarding precision and type II error rates for *Fraud Alleg.* and the remaining predictors. Standard errors appear in parentheses and are clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively. To minimize the influence of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variables are defined in Appendix 2.

Panel A: Predictive power

| Variables | Compustat Population | | Activist Insights | |
|--------------------------|----------------------|---------------------|--------------------|---------------------|
| | (1) Conf. Fraud | (2) Conf. Fraud | (3) Conf. Fraud | (4) Conf. Fraud |
| Fraud Alleg. | 0.22*** (0.037) | 0.23*** (0.037) | 0.20*** (0.046) | 0.20*** (0.046) |
| Abn. Short Int. | 0.13*** (0.031) | | -0.22* (0.117) | |
| F-score | 0.01*** (0.002) | | -0.00 (0.000) | |
| Mod. Jones | -0.00 (0.002) | | 0.01 (0.009) | |
| Top 1% - Abn. Short Int. | | 0.05** (0.021) | | -0.08*** (0.031) |
| Top 1% - F-score | | 0.03** (0.012) | | 0.07 (0.114) |
| Top 1% - Mod. Jones | | -0.00 (0.006) | | 0.15 (0.123) |
| Log MVE | 0.00*** (0.001) | 0.00*** (0.001) | 0.01 (0.009) | 0.00 (0.009) |
| Book-to-Market | 0.00 (0.001) | 0.00 (0.001) | -0.01 (0.018) | -0.01 (0.018) |
| ROA | 0.00 (0.004) | 0.00 (0.004) | 0.03 (0.038) | 0.03 (0.037) |
| Loss | 0.01*** (0.002) | 0.01*** (0.002) | 0.03 (0.033) | 0.02 (0.033) |
| Leverage | -0.01 (0.004) | -0.00 (0.004) | -0.07 (0.056) | -0.06 (0.055) |
| Financing Need | -0.00 (0.004) | -0.00 (0.004) | 0.03 (0.044) | 0.02 (0.043) |
| Big 4 | -0.01** (0.003) | -0.01** (0.003) | -0.02 (0.034) | -0.02 (0.034) |
| Tenure | -0.00*** (0.001) | -0.00*** (0.001) | -0.01 (0.018) | -0.01 (0.018) |
| Acquisit. | 0.00 (0.002) | 0.00* (0.002) | 0.01 (0.030) | 0.01 (0.030) |
| Observations | 34,720 | 34,720 | 630 | 630 |
| R-squared | 0.031 | 0.029 | 0.195 | 0.197 |
| Year and FF12 FE | YES | YES | YES | YES |

Table 4 (Continued)
Panel B: Precision rate and Type II error rate

| | <u>Conf. Fraud = 1</u> | <u>Conf. Fraud = 0</u> | <u>Precision</u> | <u>Type II error</u> |
|---------------------------------|----------------------------|----------------------------|------------------|----------------------|
| <i>Fraud Alleg.:</i> | | | | |
| Indicator = 1 | 49 | 149 | 24.7% | |
| Indicator = 0 | 484 | 34038 | | 90.8% |
| <i>Top 1% - Abn. Short Int.</i> | | | | |
| Indicator = 1 | 23 | 319 | 6.7% | |
| Indicator = 0 | 510 | 33868 | | 95.7% |
| <i>Top 1% - F-score</i> | | | | |
| Indicator = 1 | 17 | 325 | 5.0% | |
| Indicator = 0 | 516 | 33862 | | 96.8% |
| <i>Top 1% - Mod. Jones</i> | | | | |
| Indicator = 1 | 5 | 337 | 1.5% | |
| Indicator = 0 | 528 | 33850 | | 99.1% |

Table 5: Costs of unconfirmed fraud campaigns on targeted firms - Descriptive statistics

This table presents the results of univariate comparisons of changes in the mean values for 1) firms targeted with fraud allegations that are later not confirmed by the SEC or the court (*Fraud Campaigns*) and 2) firms targeted with allegations unrelated to accounting fraud such as overvaluation and stock promotion (*Non-Fraud Campaigns*) for the two years prior and the two years following these allegations. The sample consists of all campaigns covered by Activist Insights and excludes confirmed fraud allegations. To be included in the analysis, firms must have available data for all variables for at least one year prior to and one year following the allegation. This criterion is applied separately for the litigation, audit fees, and earnings tests. Bolded values indicate statistical significance at the 10 percent levels. To minimize the influence of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variables are defined in Appendix 2.

| | Non-Fraud Campaigns | | | | | Fraud Campaigns | | | | | (11) (10) - (5) |
|-------------------------------|---------------------|------------|----------|-------------|-----------------|-----------------|------------|----------|-------------|------------------|--------------------|
| | (1) N | (2) Pre | (3) N | (4) Post | (5) Δ | (6) N | (7) Pre | (8) N | (9) Post | (10) Δ | |
| <i>Outcome Variables:</i> | | | | | | | | | | | |
| Disin. SCA _t | 536 | 0.009 | 547 | 0.013 | 0.003 | 83 | 0.000 | 85 | 0.106 | 0.106 | 0.102 |
| Log Fees _t | 588 | 13.483 | 608 | 13.635 | 0.152 | 116 | 13.033 | 113 | 13.495 | 0.462 | 0.310 |
| Earnings _t | 649 | -0.181 | 674 | -0.188 | -0.007 | 127 | -0.058 | 127 | -0.003 | 0.055 | 0.062 |
| <i>Disin. SCA – Controls:</i> | | | | | | | | | | | |
| Sales Growth _{t-1} | 536 | 0.123 | 547 | 0.116 | -0.006 | 83 | 0.208 | 85 | 0.243 | 0.035 | 0.041 |
| CAR _{t-1} | 536 | 0.127 | 547 | 0.140 | 0.013 | 83 | 0.221 | 85 | 0.077 | -0.145 | -0.157 |
| Skewness _{t-1} | 536 | 0.311 | 547 | 0.355 | 0.043 | 83 | 0.177 | 85 | 0.403 | 0.226 | 0.183 |
| Volatility _{t-1} | 536 | 0.158 | 547 | 0.167 | 0.010 | 83 | 0.155 | 85 | 0.148 | -0.007 | -0.016 |
| Turnover _{t-1} | 536 | 3.534 | 547 | 4.942 | 1.407 | 83 | 2.405 | 85 | 3.773 | 1.368 | -0.040 |
| <i>Log Fees – Controls:</i> | | | | | | | | | | | |
| Log MVE _t | 588 | 6.553 | 608 | 6.717 | 0.165 | 116 | 6.161 | 113 | 6.271 | 0.110 | -0.055 |
| Leverage _t | 588 | 0.174 | 608 | 0.207 | 0.033 | 116 | 0.157 | 113 | 0.199 | 0.041 | 0.009 |
| ROA _t | 588 | -0.193 | 608 | -0.202 | -0.009 | 116 | -0.036 | 113 | 0.023 | 0.059 | 0.068 |
| Inv. & Receiv. _t | 588 | 0.165 | 608 | 0.161 | -0.004 | 116 | 0.211 | 113 | 0.215 | 0.005 | 0.009 |
| CashFlow _t | 588 | -0.073 | 608 | -0.082 | -0.009 | 116 | 0.021 | 113 | 0.055 | 0.034 | 0.043 |
| Tenure _t | 588 | 1.782 | 608 | 1.917 | 0.135 | 116 | 1.286 | 113 | 1.486 | 0.201 | 0.066 |
| Auditor Switch _t | 588 | 0.065 | 608 | 0.066 | 0.001 | 116 | 0.112 | 113 | 0.106 | -0.006 | -0.007 |
| Loss _t | 588 | 0.514 | 608 | 0.558 | 0.044 | 116 | 0.293 | 113 | 0.265 | -0.028 | -0.072 |
| Acquisit. _t | 588 | 0.287 | 608 | 0.317 | 0.030 | 116 | 0.397 | 113 | 0.389 | -0.007 | -0.037 |
| Big 4 _t | 588 | 0.634 | 608 | 0.638 | 0.004 | 116 | 0.474 | 113 | 0.575 | 0.101 | 0.097 |

Table 5 (Continued)*Log Fees – Controls:*

| | | | | | | | | | | | |
|-------------------------|-----|-------|-----|-------|---------------|-----|-------|-----|-------|--------|--------|
| Opinion _t | 588 | 0.187 | 608 | 0.150 | -0.037 | 116 | 0.164 | 113 | 0.133 | -0.031 | 0.006 |
| For. Oper. _t | 588 | 0.430 | 608 | 0.451 | 0.020 | 116 | 0.302 | 113 | 0.354 | 0.052 | 0.032 |
| Intang. _t | 588 | 0.168 | 608 | 0.187 | 0.019 | 116 | 0.180 | 113 | 0.191 | 0.011 | -0.007 |
| CR _t | 588 | 4.142 | 608 | 4.035 | -0.107 | 116 | 2.965 | 113 | 3.428 | 0.463 | 0.570 |

Earnings - Controls:

| | | | | | | | | | | | |
|--------------------------|-----|--------|-----|--------|---------------|-----|--------|-----|--------|---------------|--------------|
| Earnings _{t-1} | 649 | -0.248 | 674 | -0.168 | 0.080 | 127 | -0.131 | 127 | 0.0063 | 0.137 | 0.057 |
| SG&A _{t-1} | 649 | 0.3989 | 674 | 0.324 | -0.075 | 127 | 0.2764 | 127 | 0.1881 | -0.088 | -0.014 |
| Leverage _{t-1} | 649 | 0.2144 | 674 | 0.190 | -0.024 | 127 | 0.1786 | 127 | 0.1758 | -0.003 | 0.021 |
| Loss _{t-1} | 649 | 0.4777 | 674 | 0.519 | 0.042 | 127 | 0.315 | 127 | 0.252 | -0.063 | -0.105 |
| Acquisit. _{t-1} | 649 | 0.2681 | 674 | 0.274 | 0.006 | 127 | 0.2992 | 127 | 0.4331 | 0.134 | 0.127 |

Table 6: Costs of unconfirmed fraud campaigns on targeted firms

This table presents results from estimating equations (2)-(4) to provide a difference-in-differences estimation of changes in non-meritorious litigation risk, audit fees, and earnings for firms targeted with fraud allegations that are later not confirmed by the SEC or the court relative to firms targeted with non-fraud allegations. The analysis examines the two years prior to and the two years following the allegation. The sample consists of all campaigns covered by Activist Insights and excludes confirmed fraud allegations. Columns (1) and (2) examine changes in non-meritorious litigation risk (Dism. SCA), columns (3) and (4) changes in audit fees (Log Fees), and columns (5) and (6) changes in earnings (Earnings). Standard errors appear in parentheses and are clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively. To minimize the influence of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variables are defined in Appendix 2.

| VARIABLES | (1) Dism. SCA | (2) Dism. SCA | (3) Log Fees | (4) Log Fees | (5) Earnings | (6) Earnings |
|--------------------------------------|---------------------|---------------------|--------------------|--------------------|------------------|------------------|
| Post _{i,t} | 0.02 (0.011) | 0.01 (0.010) | -0.03 (0.030) | -0.04 (0.028) | 0.02 (0.020) | 0.01 (0.020) |
| Post x Fraud Campaign _{i,t} | 0.09*** (0.030) | 0.09*** (0.030) | 0.20*** (0.068) | 0.19*** (0.065) | 0.04 (0.045) | 0.04 (0.042) |
| Log MVE _{i,t-1} | | 0.01 (0.010) | | | | |
| Sales Growth _{i,t-1} | | 0.03 (0.028) | | | | |
| CAR _{i,t-1} | | 0.01 (0.013) | | | | |
| Skewness _{i,t-1} | | 0.01 (0.006) | | | | |
| Volatility _{i,t-1} | | -0.11 (0.101) | | | | |
| Turnover _{i,t-1} | | 0.00 (0.002) | | | | |
| Fraud Alleg. _{i,t} | -0.04 (0.054) | -0.04 (0.050) | 0.01 (0.154) | -0.00 (0.138) | -0.03 (0.059) | -0.03 (0.058) |
| Log MVE _{i,t} | | | | 0.07** (0.029) | | |
| Leverage _{i,t} | | | | 0.22* (0.131) | | |
| ROA _{i,t} | | | | 0.06 (0.065) | | |
| Inv. & Receiv. _{i,t} | | | | -0.39 (0.296) | | |
| CashFlow _{i,t} | | | | 0.11 (0.107) | | |
| Tenure _{i,t} | | | | 0.03 (0.050) | | |

Table 6 (Continued)

| VARIABLES | Dism. SCA | Dism. SCA | Log Fees | Log Fees | Earnings | Earnings |
|-------------------------------|--------------|--------------|-------------|--------------------|----------|------------------|
| Auditor Switch _{i,t} | | | | -0.01 (0.076) | | |
| Loss _{i,t} | | | | 0.04 (0.042) | | |
| Acquist. _{i,t} | | | | 0.04 (0.034) | | |
| Big 4 _{i,t} | | | | 0.44*** (0.126) | | |
| Opinion _{i,t} | | | | -0.01 (0.043) | | |
| For. Oper. _{i,t} | | | | 0.12 (0.078) | | |
| Intang. _{i,t} | | | | 0.47** (0.193) | | |
| CR _{i,t} | | | | -0.01** (0.003) | | |
| Earnings _{i,t-1} | | | | | | 0.02 (0.091) |
| SG&A _{i,t-1} | | | | | | -0.09 (0.083) |
| Leverage _{i,t-1} | | | | | | -0.03 (0.095) |
| Loss _{i,t-1} | | | | | | 0.02 (0.026) |
| Acquisit. _{i,t-1} | | | | | | 0.00 (0.018) |
| Observations | 1,251 | 1,251 | 1,425 | 1,425 | 1,577 | 1,577 |
| R-squared | 0.327 | 0.335 | 0.947 | 0.953 | 0.747 | 0.751 |
| Firm and Year FE | YES | YES | YES | YES | YES | YES |

Table 7: SCAs outcomes

This table presents results from estimating equation (5) examining whether SCAs including allegations similar in nature to the allegations raised by the activist or which directly name the activist are more meritorious and thus more likely to settle. The sample consists of all SCAs filed between 2006 and 2015 and excludes on-going SCAs. The dependent variable in column (1) is whether a case was settled. In column (2), cases that settled for an ‘nuisance’ amount, defined as SCAs settling for less than \$1M (Skinner 1997), are classified as dismissed. Column (3) examines settlement amounts. Standard errors appear in parentheses and are clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively. To minimize the influence of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variables are defined in Appendix 2.

| VARIABLES | (1) Settled | (2) Settled (> \$1M) | (3) Log Settlement |
|-------------------------|--------------------|-------------------------|-----------------------|
| Activist Case | 0.19** (0.076) | 0.22*** (0.077) | 3.10** (1.198) |
| Top 5 Law Firm | 0.18*** (0.059) | 0.18*** (0.059) | 3.39*** (0.999) |
| Maximum Damages | 0.06*** (0.021) | 0.05** (0.021) | 1.03*** (0.346) |
| SEC Enforcement | 0.15** (0.059) | 0.16*** (0.059) | 2.72*** (0.946) |
| Log MVE | -0.05** (0.022) | -0.05** (0.022) | -0.70** (0.354) |
| ROA | -0.18 (0.169) | -0.23 (0.168) | -2.98 (2.670) |
| TobinsQ | -0.01 (0.014) | -0.01 (0.014) | -0.09 (0.228) |
| Institutional Ownership | -0.13 (0.079) | -0.09 (0.079) | -1.84 (1.270) |
| Log Analysts | 0.02 (0.037) | 0.04 (0.037) | 0.68 (0.589) |
| Restatement | 0.05 (0.048) | 0.05 (0.049) | 0.80 (0.768) |
| Observations | 514 | 514 | 514 |
| R-squared | 0.138 | 0.144 | 0.159 |
| Year and FF12 FE | YES | YES | YES |

Table 8: Bid-ask spread changes

This table presents results from estimating equation (6) examining changes in information asymmetry following activists' accounting fraud allegations that are later not confirmed by the SEC or the court relative to activists' non-fraud allegations. The dependent variable in column (1) is average bid-ask spread for a 20-day window following the allegation less average bid-ask spread for a similar window prior to the allegation. Column (2) uses a 40-day window, column (3) a 90-day window, and Column (4) a 180-day window. Standard errors appear in parentheses and are clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively. To minimize the influence of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variables are defined in Appendix 2.

| VARIABLES | (1) 20-day | (2) 40-day | (3) 90-day | (4) 180-day |
|------------------|---------------------|---------------------|---------------------|---------------------|
| Fraud Report | 0.04** (0.016) | 0.05** (0.023) | 0.06* (0.034) | 0.07 (0.043) |
| Log MVE 1 | 0.01 (0.007) | 0.02*** (0.009) | 0.03*** (0.012) | 0.04** (0.016) |
| Turnover 1 | -0.00*** (0.000) | -0.00** (0.000) | -0.00* (0.000) | -0.00 (0.000) |
| Log Price | -0.01 (0.008) | -0.03** (0.010) | -0.06*** (0.016) | -0.07*** (0.023) |
| Volatility 1 | -0.18* (0.107) | -0.29** (0.141) | -0.86*** (0.204) | -1.25*** (0.270) |
| Book-to-Market | -0.06*** (0.025) | -0.10*** (0.034) | -0.11** (0.046) | -0.11* (0.058) |
| Observations | 518 | 518 | 518 | 518 |
| R-squared | 0.171 | 0.222 | 0.245 | 0.257 |
| Year and FF12 FE | YES | YES | YES | YES |

Table 9: Reaction from attorneys and the SEC – Reverse Mergers

This table presents descriptive statistics regarding actions taken by attorneys and the SEC in response to activists' accounting fraud allegations. The analysis splits the sample based on whether the targeted firm got listed in the US through a reverse merger (*RM firms*) or through a traditional listing method (e.g., IPO) (*Traditional firms*). Using Activists Insights, SeekingAlpha, and major short-sellers' website, I identify 50 accounting fraud campaigns against *RM firms* and 109 campaigns against *Traditional firms*. *Any Response* refers to a) a law firm announcing an investigation to evaluate the allegations and decide whether to file a SCA against the firm, b) an SEC investigation being announced, c) a SCA being filed, or d) an AAER being issued. *SEC or SCA Actions* refer to a) SEC investigation being announced, b) a SCA being filed, or c) an AAER being issued. *Settled SCA or AAER* refers to a) a settled SCA, or b) an AAER being issued. *Pending SCA* refers to on-going SCAs.

Panel A: RM firms (Total Campaigns = 50)

| | <u>Frequency</u> | <u>Average</u> |
|---------------------|------------------|----------------|
| Any response | 36 | 72% |
| SEC or SCA Actions | 28 | 56% |
| Settled SCA or AAER | 24 | 48% |
| Pending SCA | 0 | 0% |

Panel B: Traditional firms (Total Campaigns = 109)

| | <u>Frequency</u> | <u>Average</u> |
|---------------------|------------------|----------------|
| Any response | 54 | 50% |
| SEC or SCA Actions | 41 | 38% |
| Settled SCA or AAER | 24 | 22% |
| Pending SCA | 6 | 6% |

Table 10: Reverse Mergers

Panel A presents results from estimating a modified version of equation (1) examining the predictive power of activist short-sellers' fraud allegations against 1) firms that got listed in the US through a reverse merger (*Fraud Alleg. – RM*) and 2) traditionally listed firms (*Fraud Alleg. – Traditional*). Columns (1) and (2) present results examining all firm-years, for the period 2006-2015, with available data on Compustat and CRSP. Columns (3) and (4) focus on *all* campaigns covered by Activist Insights and examine whether the fraud allegation provides additional predictive power over and above simply being the target of an activist. **Panel B** presents results from estimating a modified version of equations (2)-(4) to provide a difference-in-differences estimation of changes in non-meritorious litigation risk, audit fees, and earnings for RM firms/Traditional firms targeted with fraud allegations that are later not confirmed by the SEC or the court relative to firms targeted with non-fraud allegations. Columns (1) and (2) examine changes in non-meritorious litigation risk (*Dism. SCA*), columns (3) and (4) changes in audit fees (*Log Fees*), and columns (5) and (6) changes in earnings (*Earnings*). Fraud Campaign –RM (Traditional) refers to activists' allegations made against a RM (traditional) firm. **Panel C** presents results from estimating a modified version of equation (5) examining whether SCAs including allegations similar in nature to the allegations raised by the activist or which directly name the activist are more meritorious and thus more likely to settle. The dependent variable in column (1) is whether a case was settled. In column (2), cases that settled for an 'nuisance' amount, defined as SCAs settling for less than \$1M (Skinner 1997), are classified as dismissed. Column (3) examines settlement amounts. Activist Case – RM (Traditional) is an indicator variable set to one for SCAs related to reverse merger (traditional) firms and containing allegations similar in nature to the allegations raised by the activist. **Panel D** presents results from estimating equation (6) examining changes in information asymmetry following activists' accounting fraud allegations that are later not confirmed by the SEC or the court relative non-fraud allegations. The dependent variable in column (1) is average bid-ask spread for a 20-day window following the allegation less average bid-ask spread for a similar window prior to the allegation. Column (2) uses a 40-day window, column (3) a 90-day window, and Column (4) a 180-day window. Standard errors appear in parentheses and are clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively. To minimize the influence of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variables are defined in Appendix 2.

Panel A: Predictive power of fraud allegation by activist short-sellers

| Variables | (1) Conf. Fraud | (2) Conf. Fraud | (3) Conf. Fraud | (4) Conf. Fraud |
|----------------------------|--------------------|--------------------|--------------------|--------------------|
| Fraud Alleg. - RM | 0.32*** (0.069) | 0.32*** (0.069) | 0.32*** (0.101) | 0.32*** (0.100) |
| Fraud Alleg. - Traditional | 0.17*** (0.044) | 0.18*** (0.044) | 0.13*** (0.046) | 0.13*** (0.046) |
| Abn. Short Int. | 0.13*** (0.031) | | -0.20* (0.120) | |
| F-score | 0.01*** (0.002) | | -0.00 (0.000) | |
| Mod. Jones | -0.00 (0.002) | | 0.01 (0.009) | |
| Top 1% of Abn. Short Int. | | 0.05** (0.021) | | -0.07** (0.035) |
| Top 1% of F-score | | 0.03** (0.012) | | 0.08 (0.111) |
| Top 1% of Mod. Jones | | -0.00 (0.006) | | 0.15 (0.116) |
| Control Variables Included | YES | YES | YES | YES |
| Observations | 34,720 | 34,720 | 630 | 630 |
| R-squared | 0.033 | 0.030 | 0.196 | 0.198 |
| Year and FF12 FE | YES | YES | YES | YES |

Table 10 (Continued)**Panel B: Costs of unconfirmed fraud campaigns on targeted firms**

| VARIABLES | (1) Dism. SCA | (2) Log Fees | (3) Earnings |
|------------------------------------|--------------------|--------------------|------------------|
| Post | 0.01 (0.010) | -0.04 (0.028) | 0.01 (0.020) |
| Post x Fraud Campaign – RM | 0.04 (0.035) | 0.35*** (0.131) | -0.02 (0.032) |
| Post x Fraud Campaign –Traditional | 0.11*** (0.036) | 0.14* (0.075) | 0.06 (0.054) |
| Standalone Variables Included | YES | YES | YES |
| Control Variables Included | YES | YES | YES |
| Observations | 1,251 | 1,425 | 1,577 |
| R-squared | 0.337 | 0.953 | 0.751 |
| Firm and Year FE | YES | YES | YES |

Panel C: SCAs Outcome

| VARIABLES | (1) Settled | (2) Settled (>1M) | (3) Log Settlement |
|-----------------------------|--------------------|----------------------|-----------------------|
| Activist Case - RM | 0.32*** (0.106) | 0.35*** (0.108) | 5.11*** (1.622) |
| Activist Case - Traditional | 0.11 (0.091) | 0.14 (0.093) | 1.90 (1.469) |
| Control Variables Included | YES | YES | YES |
| Observations | 514 | 514 | 514 |
| R-squared | 0.143 | 0.148 | 0.163 |
| Year and FF12 FE | YES | YES | YES |

Table 10 (Continued)
Panel D: Bid-ask spread changes

| VARIABLES | (1) 20-day | (2) 40-day | (3) 90-day | (4) 180-day |
|----------------------------|--------------------|-------------------|-----------------|-----------------|
| Fraud Report – RM | 0.02 (0.051) | 0.06 (0.062) | 0.11 (0.077) | 0.15 (0.095) |
| Fraud Report – Traditional | 0.04*** (0.015) | 0.05** (0.022) | 0.05 (0.035) | 0.04 (0.044) |
| Control Variables Included | YES | YES | YES | YES |
| Observations | 518 | 518 | 518 | 518 |
| R-squared | 0.171 | 0.222 | 0.247 | 0.259 |
| Year and FF12 FE | YES | YES | YES | YES |

Table 11: Delisted Firms

This table provides descriptive statistics regarding delistings that occurred following the initiation of a campaign containing unconfirmed fraud allegations. The table breaks down delistings based on the reason the firm got delisted as provided by CRSP. *Any Action* refers to a) a Law firm announcing investigation to evaluate whether to file a SCA against the firm, b) a SEC investigation being announced, or c) a SCA being filed. *SEC Inv. Or SCA Fil.* Refers to whether an SEC Investigation was initiated but no AAER was later filed or an SCA was filed and later got dismissed.

| <i>Delisted Reason:</i> | N | Days since First Alleg. | | Actions Taken Summary | | | |
|--|----|--------------------------------|--------|------------------------------|------|----------------------|-----|
| | | Mean | Median | Any Action | % | SEC Inv. or SCA Fil. | % |
| Bankruptcy | 1 | 1553 | 1553 | 0 | 0% | 0 | 0% |
| Company request | 1 | 1259 | 1259 | 0 | 0% | 0 | 0% |
| Delinquent in filing or non-payment of fees | 7 | 744 | 812 | 4 | 57% | 2 | 29% |
| Does not meet exchange's financ. guidelines | 5 | 412 | 357 | 3 | 60% | 1 | 20% |
| Insufficient capital, surplus, and/or equity | 3 | 1687 | 1488 | 1 | 33% | 0 | 0% |
| Merger | 27 | 925 | 812 | 6 | 22% | 1 | 4% |
| Price fell below acceptable level | 3 | 1198 | 925 | 2 | 67% | 1 | 33% |
| Protection of investors | 3 | 407 | 157 | 3 | 100% | 2 | 67% |

Figure 1: Parallel Trend Assumption

Figures 1A-1C present the regression coefficient estimates and 95% confidence intervals (two-tailed) that map out the treatment effect by event period. I replace *Post* and *Post x Fraud Campaign* from equations (2)-(4) with indicator variables for each event period and each event period interacted with Fraud Campaign. I omit the year just prior to the fraud allegation and as such year $t-1$ serves as the benchmark for the remaining effects. Figure 1A presents results regarding non-meritorious litigation risk, Figure 1B regarding audit fees, and Figure 1C regarding earnings. Variables are defined in Appendix 2.

Figure 1A: Non-meritorious Litigation Risk

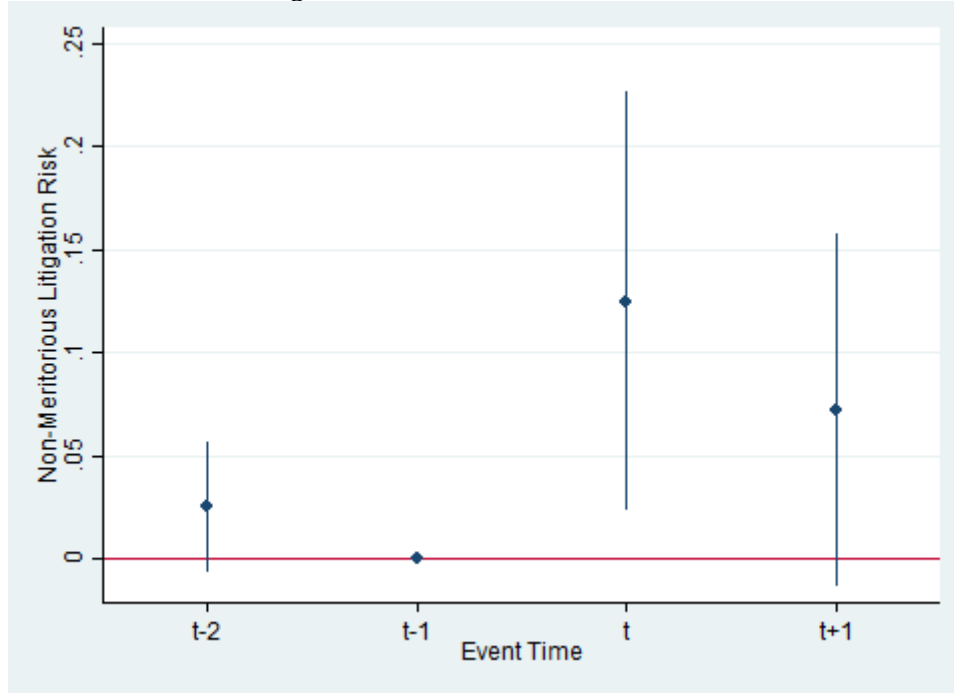


Figure 1B: Audit Fees

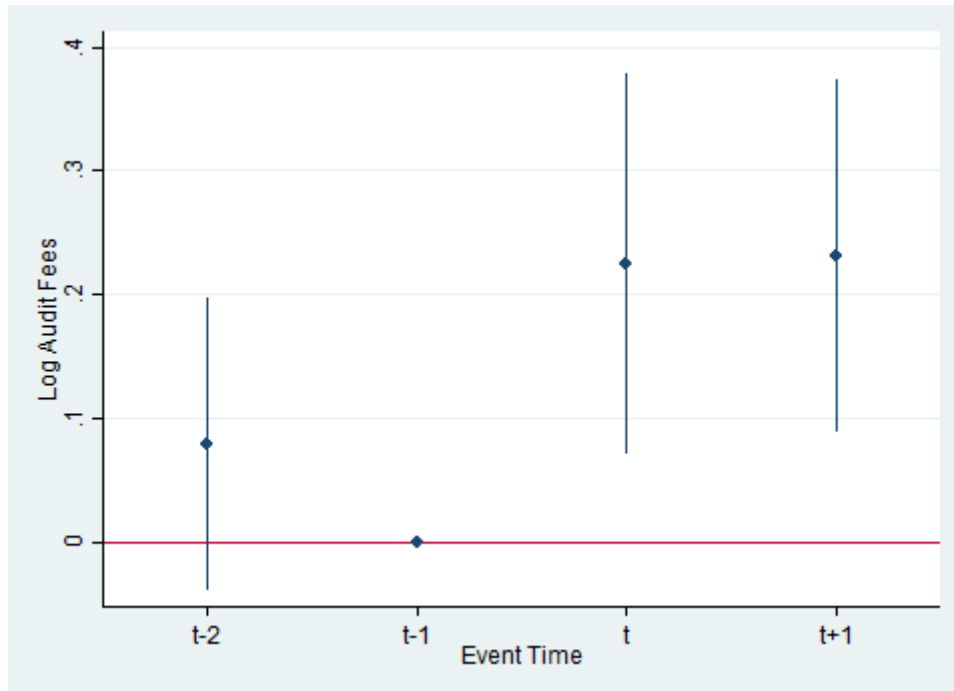


Figure 1 (Continued)
Figure 1C: Earnings

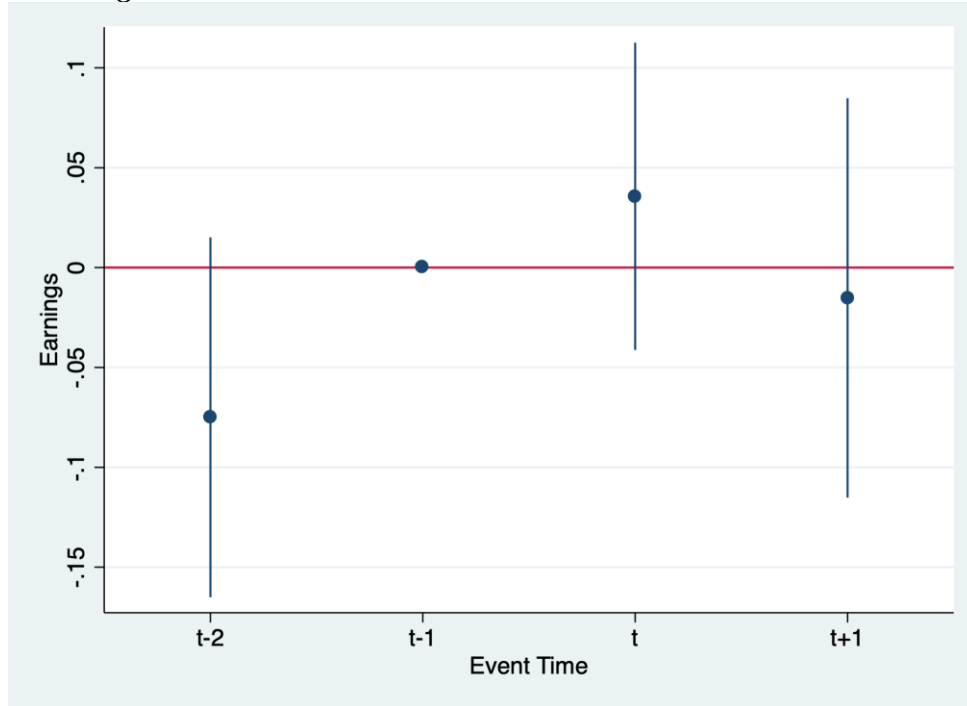


Figure 2: Buy-and-hold abnormal returns

These figures plot the mean buy-and-hold abnormal returns for a [0, 252] day window for: a) confirmed and unconfirmed fraud allegations (Figure 2A), and b) unconfirmed fraud allegations and non-fraud allegations (Figure 2B) made by activists covered by Activist Insights. The analysis includes all the reports in the Activist Insights and not only the initial report of each campaign. The shaded areas represent 95% confidence interval. The red (orange) [green] represents confirmed fraud allegations (unconfirmed fraud allegations) [non-fraud allegations]. The abnormal return is calculated by adjusting for decile size return. For firms delisted, the proceeds are reinvested in the remaining firms of the group.

Figure 2A: Confirmed vs unconfirmed fraud campaigns

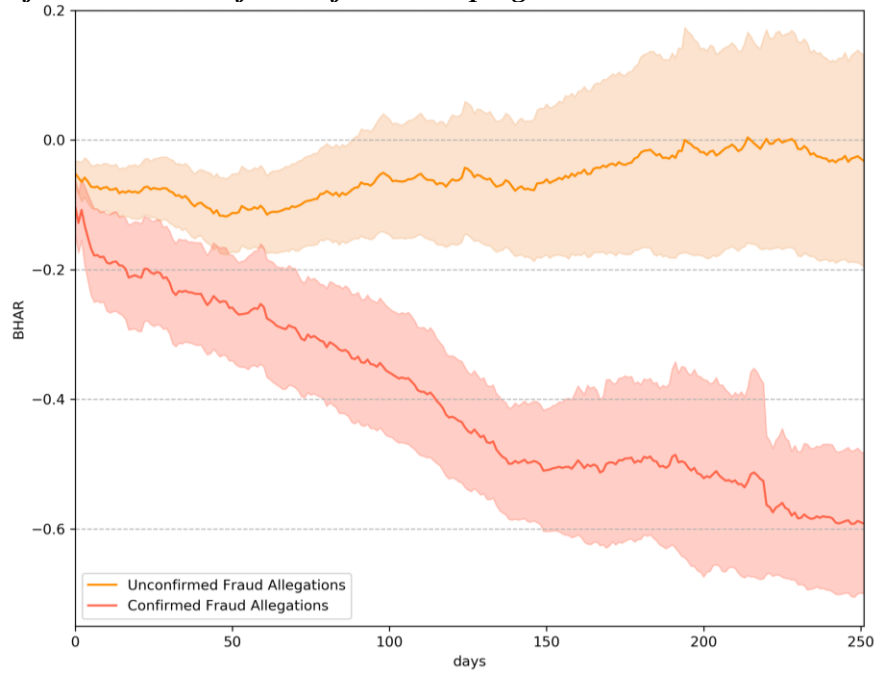


Figure 2B: Unconfirmed fraud campaigns vs non-fraud campaigns

