Persistence of Activist Short-Sellers' Performance[*]

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July 2020

Abstract: While the prior literature has documented that the aggregate level of short sales is informative, critics have expressed concern that individual activist short sellers (who not only take short positions but also publish campaigns against target firms) manipulate stock prices to profit from their short positions. We find that activist short sellers do not exhibit persistence in predicting targets' returns in various windows, but do show persistence in identifying targets that delist. Moreover, the market identifies and efficiently reacts to this persistent aspect of activists' performance at the time the campaign is announced. We also find that the short side is able to capitalize on this more negative market reaction on the campaign initiation date by building up short positions prior to the public campaign announcement. Overall, our results suggest that the market provides incentives for activists to maintain their reputations and not issue manipulative campaigns.

Keywords: Short campaigns, Activist short sellers, Performance persistence, Security Markets
JEL Classifications: D82, G10, G14

1. Introduction

The role of short sellers in the price formation process has been controversial.[1] While some critics argue that their activities are aimed at manipulating a firm's stock price in order to profit from short-term price declines (see, e.g., Delevingne 2019), the prior literature has documented that, on average, short sales contain value-relevant information (e.g., Desai et al. 2002; Asquith et al. 2005). Specifically, research has documented that the aggregate level of short sales predicts negative future earnings and returns, financial misconduct, recommendation downgrades, insider sales, and earnings restatements (Dechow et al. 2001; Richardson 2003; Christophe et al. 2004; Desai et al. 2006; Christophe, Ferri, Hsieh 2010; Karpoff and Lou 2010; Hirshleifer et al. 2011; Engelberg et al. 2012; Khan and Lu 2013; Drake et al. 2015; Ljungqvist and Qian 2016).

While the literature has documented that the aggregate level of short sales is informative, there is little evidence on the performance of individual short sellers. Determining whether the market can distinguish between superior and inferior performing short sellers provides insights on the ability of market forces (absent regulation) to identify informative short sales. Thus, understanding the performance of individual short sellers, and any persistence in individual short seller's performance, is important for potential regulation aimed at the transparency of and restrictions on short selling activities (Jones et al. 2016; SEC 2014). However, investigations into performance differences at the individual short seller level have been hampered by data availability; currently, individual short positions are not required to be disclosed in the United States.

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[1] Short sellers take short positions in a stock to either profit from future price declines or hedge against price movements of other financial instruments.

We overcome this challenge by focusing on activist short sellers. In addition to taking a short position in a stock, activist short sellers publicly announce their short positions and negative views on target firms (Ljungqvist and Qian 2016). These public announcements, called short campaigns, provide a unique opportunity to investigate individual short sellers' performance. Since the authors of these campaigns announce their rationale for their short positions, it is more likely that the position is based on negative information about the target firm's future performance rather than hedging needs.[2] Thus, this sample allows us to investigate the performance of individual short sellers in identifying overvalued firms.

By publicly sharing their short campaigns, activist short sellers can potentially serve as an important information intermediary. The prior literature on the performance of information intermediaries has focused on sell-side security analysts (e.g., Mikhail et al. 2004).[3] While sell-side analysts consistently follow a set of firms and routinely provide stock recommendations and earnings forecasts, activist short sellers issue short reports on selected firms sporadically, and only when they believe those firms are overvalued. Thus, there is an asymmetry in when and what information is provided to the market between sell-side analysts and activist short sellers.[4] Further, the institutional setting and regulatory environment are very different between these two

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[2] Using the EU's requirement that short positions more than 0.5% must be disclosed, Jank and Smajlbegovic (2017) find that local, diversified and active funds outperform other funds in their short positions. Choi et al. (2018) infer equity short sales of hedge funds and other institutional investors by combining data on the detailed transactions and institutional holdings in the U.S during a specific period when the transactions data are available. They find hedge fund short sales covered within five trading days are highly profitable, but short positions kept open longer than five days are not. They further document that non-hedge fund institutional investors do not profit on their short trades. These two studies focus on short positions and are thus are not able differentiate short positions driven by hedging needs from those driven by negative information.

[3] The prior literature on performance persistence in stock picking has generated mixed results. Carhart (1997) finds little evidence of persistence in mutual fund performance after controlling for common factors in stock returns and investment expenses (see also Gruber 1996; Zheng 1999; Bollen and Busse 2001). By contrast, Berk and van Binsbergen (2015) document evidence of persistent cross-sectional differences in mutual fund managers' skill.

[4] The literature has posited that sell-side analysts have the incentive to curry favor with the management of firms they follow in order to obtain access to management (e.g., Ke and Yu, 2006; Mayew 2008). Since activist short sellers openly criticize their target firms, they are unlikely to have access to management and must use alternative sources of information as support for their short campaign.

types of intermediaries. Market participants are able to obtain the identity and background of sell-side analysts, while some activist short-sellers chose to remain anonymous. Sell-side analysts are paid by brokerage firms, bounded by their fiduciary duty to their clients, and incentivized by third-party ranking services such as *Institutional Investor* All-Star rankings. By contrast, activist short sellers provide their reports freely and earn money through their short positions. Further, the ranking of activist short sellers is a very recent phenomenon. The lack of regulatory oversight and limited presence of ranking services leave more room for opportunistic behavior that may work against finding persistence in performance for activist short sellers.

Despite these differences, activist short sellers, like sell-side security analysts, face strong incentives to develop a reputation for superior performance. It is costly to hold short positions open for long periods of time, and thus activist short sellers profit more from their campaigns if the target firm's price declines significantly at the publication date, allowing them to quickly cover their short positions. Thus, it is important to activists that their campaign announcements generate significantly negative market reactions. While we conjecture that the market would react more strongly to those activists with a reputation for superior performance, the ability of the market to identify these activists might be limited. Given the sporadic nature of the campaigns, there may be a limited history for a given activist for the market to use to predict performance. Moreover, even if the activist is skilled at identifying overvalued firms, the target's management can respond and correct the issues identified by the activist, thereby mitigating any negative price decline. Thus, whether activists demonstrate persistence in performance and if so, whether the market recognizes this persistence at the campaign publication date are unclear *ex ante*.

To study these questions, we obtain a sample of 316 campaigns initiated by activist short sellers from Activist Insights. We consider three measures of performance: the sign of the target's excess returns following the campaign, the sign and magnitude of the target's excess returns following the campaign, and the delisting status of the target. Overall, we find little evidence of persistence in the performance of activist short sellers' short campaigns using either one of the two excess returns measures, regardless of the return accumulation window examined. The lack of persistence in targets' returns is in contrast to the previous finding of persistence in returns following stock recommendations of sell-side analysts. This could either reflect activist short sellers' inability to consistently identify overvalued targets, opportunistic behavior to intentionally (and occasionally) publish non-informative campaigns to manipulate stock prices and profit from a temporary price decline, and/or the inherent difficulties in consistently timing the short bets correctly because of the heightened arbitrage or synchronization risk (De Long et al. 1990; Abreu and Brunnermeier 2002; Davis 2012).

By contrast, we do find evidence of persistence when we use an indicator variable for whether the target firm delists following the campaign. The advantage of this performance measure is that it is not window specific, and thus reduces the noise due to the uncertainties in the timing of when prices incorporate the bad news. Our results document that a target is more likely to delist if a higher percentage of the activist short seller's past targets delisted. In addition, the percentage of past targets that delist also predicts other indicators for the target's fundamental performance including lower than expected future earnings and a higher likelihood of class action lawsuits and leadership changes. The persistence in performance using the delisting measure is not consistent with either a lack of skill or opportunistic behavior on the part of activist short sellers.

A potential concern in interpreting these results in favor of persistence in performance is survivorship bias. Specifically, those activists whose short positions are unprofitable following the campaign initiation or those who experience adverse reactions by the target's management may choose to stop shorting firms and/or publicly announcing their short positions.[5] This self-selection may lead to only the few activists who demonstrate superior performance surviving and the sample attribution may bias the estimation of persistence (Jagannathan et al. 2010). To address this concern, we follow Braun et al. (2017) and examine whether our findings hold after restricting our sample to include only the activists who survived. We find that all results hold in the restricted sample, suggesting that the persistence in performance we document is unlikely to be driven by sample attrition and survivorship bias.

Next, we examine whether the market incorporates activist short sellers' past track record at the time the campaign is announced. We find that the market reacts more negatively to activist short sellers who had a higher percentage of targets delisted in the past. This result suggests that the market incorporates activist short sellers' past performance when reacting to their campaigns. The greater market reaction provides incentives for activist short sellers to maintain their track records, as it allows them to cover their short positions more quickly and/or with greater profits. Indeed, in preliminary tests, we find a greater increase in the aggregate short interest before the publication date in the targets of activists with a higher percentage of past targets that delist. This provides initial evidence that the short side as a whole is able to capitalize on the greater market reaction to activists who exhibit persistence in their performance.

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[5] Zatarra Research and Investigations reported that in 2006, it spent over $100,000 in legal fees when Wirecard sued it for defamation and malicious falsehoods for overly critical reports. Wirecard also hired private investigators to follow the owner of Zatarra, and many firms who held public short positions in Wirecard and journalists working on topics related to Wirecard experienced cyberattacks. In the past decade, BaFin, the German regulator, opened up numerous investigations of market manipulation by Wirecard short sellers, sued the *Financial Times* after a series of critical articles about Wirecard accounting, and banned short selling in the company's stock for a period of time (Davies and Chung 2020).

Our paper contributes to several strands of literature. First, our paper contributes to the literature examining the persistence in performance. Prior studies have examined the performance persistency of various financial professionals including mutual funds (e.g. Carhart 1997), analysts (e.g., Mikhail et al. 2004), hedge funds (e.g. Jagannathan et al. 2010), private equity (e.g., Braun et al. 2017; Kaplan and Schoar 2005), and venture capitalists (e.g., Nanda et al. 2018). This literature has yielded mixed results. For example, while some studies document that the performance of fund managers and/or sell-side analysts exhibits persistence (Berk and van Binsbergen 2015; Choi et al. 2018), others find no evidence of systematic performance differences once other factors (such as stock returns, investment expenses, and individual characteristics) are accounted for (Carhart 1997). To the best of our knowledge, we are the first to examine the persistence of a group of professionals who focus mainly on short selling and publicly announce their positions and rationale.

Second, our paper also contributes to the short-selling literature and, in particular, the incentives faced by activist short sellers. Recent work has begun to investigate the concerns that activist short sellers issue market-moving reports to make their short campaigns profitable (Katz and Hancock 2017; Weiner et al. 2017). For example, Mitts (2018) finds empirical evidence consistent with manipulation by activist short sellers with "fake names" on Seeking Alpha. Zhao (2019) examines whether activist short sellers are more likely to target firms with opaque information environments in order to hide their intent to manipulate. His collection of results, however, suggests that the short campaigns in his sample reflect informative rather than manipulative attacks.

In contrast to this work, we examine if activist short sellers face incentives to consistently initiate informative campaigns, and whether the market recognizes these performance differences

at the publication date. While recent comments by the SEC indicate the difficulty in identifying strategic and illegal behavior on the part of activist short sellers who are "dancing a very fine line between trading and market manipulation" (Delevingne 2019), our evidence suggests that the market is able to identify individual short sellers with superior track records. Thus, market forces can potentially discipline manipulative campaigns and provide activists with incentives to consistently initiate informative campaigns (Benabou and Laroque 1992).

In this respect, our paper also contributes more broadly to the literature on market manipulation (Benabou and Laroque 1992; Putnins 2012; Siddiqi 2017; Hackethal et al. 2019) and social media. It has been suggested that investors should be allowed to act as intermediaries for each other, resulting in financial analyses (such as campaign reports by activist short sellers) provided freely to "democratize investment research" (Farrell et al. 2018; Gomez et al. 2018). However, the lack of traditional oversight and a platform with a wider audience also make investment research on social media more prone to manipulation. Blankespoor et al. (forthcoming) call for more research on the potential for misinformation in the social media. While our paper does not address misinformation directly as Kogan et al. (2018) do, we shed light on whether traditional market disciplining mechanisms can still help prevent manipulative behavior among this new form of information intermediary.

2. Data and Descriptive Statistics

We begin with a sample of activist short sellers followed by Activist Insights. Activist Insights maintains a database that contains activist short sellers' campaigns initiated worldwide since 2009.[6] In the Activist Insights database, each target and activist short seller pair is

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[6] These campaigns take the form of either a written report, a presentation at an investor conference, or discussions on financial television programs.

considered one campaign, and the campaign initiation date is the date of the first public announcement against the target by that activist.[7] We start with a sample of 1,123 campaigns whose targets are listed on the US market. To ensure we have a complete history of the campaigns initiated by an activist, we restrict our sample to those activists who issued their first campaign no earlier than 2009. This criterion reduces our sample to 740 observations. In certain instances, multiple activists issue a report on a given target. To ensure that we properly attribute the performance of a campaign to the activist short seller who first initiated it, we eliminate "follow-on" campaigns, defined as those initiated against the same target within one year of the first campaign. This requirement reduces our sample to 585 observations.[8] Since we are interested in examining persistence in performance, and thus need to measure the performance of past campaigns, we require that each sample activist has at least one campaign that is issued at least one year prior to the current campaign.[9] This criterion eliminates activists who only issue one campaign during the entire sample period, as well as the first campaign of each activist, reducing our sample to 391 observations. Similarly, we exclude campaigns published after 2018 so that we are able to measure the performance of the campaign in the one year following initiation, further reducing our sample to 332 observations. After requiring non missing controls, our final sample consists of 316 observations, representing campaigns from 36 unique activist short sellers targeting 302 unique firms (see Panel A of Table 1).

Panel B of Table 1 provides descriptive statistics for our final sample. The target firms in our sample tend to be small but reasonably well followed, with a median total assets (SIZE) of

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[7] The data provider does not consider follow-up reports and announcements on the same target from the same activist as new campaigns.

[8] Thus, our sample only includes the first campaign issued against a target, or campaigns that are at least 365 days later than the most recent campaign against that target.

[9] To ensure that the performance of the past target is observable by the time of current campaign publication, we require past campaigns to be published more than 365 days ago to be included in the calculation of the activist's prior performance.

$225.293 million, and analyst following (ANALYSTS) of 3. The mean (median) book-to-market (BTM) of our sample firms is 0.301 (0.213). On average, 46% of the target firm's outstanding shares are held by institutions (INST). The target firms tend to experience positive returns momentum prior to the campaign publication date; the mean (median) of cumulative returns in the [-180, -11] window relative to the campaign announcement date (PRE_MOMENTUM) is 0.519 (0.216). The mean (median) return volatility in the [-180, -11] window relative to the campaign announcement date (PRE_VOLATILITY) is 0.042 (0.036). These descriptive statistics indicate that activists are not targeting little known firms or firms that experience negative returns prior to the start of the campaign.

Consistent with the campaign reports containing material news about the target firms, the excess returns surrounding the publication date are, on average, negative regardless of the window examined. For example, the mean (median) CAR_0, defined as the market-adjusted return on the publication date, is -0.040 (-0.026). We also find that the intermediate- and long-term return performance of targets is negative; the mean and median CAR_0to252, defined as cumulative market-adjusted return over [0, 252], are -0.090 and -0.070, respectively. These statistics are consistent with Ljungqvist and Qian (2016) who document negative returns, on average, to short campaigns initiated between 2006-2011. Following the initiation of the short campaign, 7.6% of targets are delisted due to performance (DELIST_PERF).[10] Approximately 3.5% and 21.5% of targets experience a change in their auditor (AUDITOR_CH) or a change in company leadership (LEADER_CH), respectively, subsequent to the short campaign. The percentage of targets named in a class-action lawsuit following the short campaign (LAWSUIT) is 24.1%. Approximately 13.9% of the sample reports accuse the target firm of fraud. The mean

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[10] As described in Appendix A, we use CRSP delisting code 400, 460, and 490 (related to liquidation) and 500, 504-591 (related to performance) as delisting events due to poor performance (codes 501-503 indicate a move to a major exchange and thus are not coded as delisting due to performance issues).

standardized quarterly unexpected earnings in the four quarters after the campaign initiation

(SUE_NEXTYR) is, on average, positive (0.127), suggesting that targets, on average, do not

underperform, at least in terms of accounting performance, in the year after the activist first

identifies them as a target

To measure the prior performance of the sample activist, we use three measures. First, we

calculate the average excess return to all of the activist's campaigns initiated at least one year

prior to the current campaign.[11] We measure these excess returns over a one month

(PAST_AVG1M), three month (PAST_AVG3M), and one year (PAST_AVG1Y) window. As

shown in Panel B, the mean and median average return of past campaigns is negative.[12] Our

second metric measures the percentage of past campaigns of the activist that generated negative

excess returns. Over the one-month (one-year) window, a mean of 70.9% (76.8%) of the

activist's past campaigns were associated with negative excess returns. The final past

performance measure we examine, PAST_%DELIST, indicates that, on average, 10.4% of the

targets of the activist's prior campaigns delist. In our sample, approximately 23% of our

observations are from campaigns with anonymous activists (ANON).[13] The mean (median)

tenure of the activists at the time of publication (TENURE) is 4.91 (5) years. The tenure of the

activist short seller is measured as the number of years between the year an activist is first

founded (as listed in the Activist Insights database) and the year of the campaign publication.[14]

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[11] Results based on the median (instead of mean) return are qualitatively similar (results not tabulated).
[12] The sample mean (median) of PAST_AVG is more negative than the sample average of all campaigns because it gives authors with more publications (or longer publication history) more weight and also gives their earlier publications more weight. In other words, for any author at any point in time, PAST_AVG includes all past campaigns dating back to her first campaign. Note that an author's first campaign will not be included in the calculation of the sample average (median) due to the sample selection criterion that requires a non missing past track record. This finding suggests that the performance of activist short sellers in identifying overvalued firms is better in their earlier years than their later years.
[13] Activist Insights codes an activist short seller (either individuals or organizations) who announces campaigns using alias as anonymous.
[14] If year founded is missing, then the year of the first publication in the Activist Insights database is used.

Overall, these descriptives indicate that the track record of the sample activists is reasonably good.

Table 2 provides a correlation matrix for certain key variables. We find that CAR_0 is negatively correlated with (LAWSUIT, correlation = -0.28, two-tailed p < 0.01), suggesting significant price drop on the campaign initiation date might trigger the class action lawsuit. We also find that the market-adjusted return on campaign initiation date is negatively correlated with FRAUD (correlation = -0.16, two-tailed p < 0.05), indicating the market reacts more strongly when the activist alleges fraud. The one-year market-adjusted excess return is negatively correlated with the indicator variable for whether the target delists (DELIST_PERF), experiences an auditor change (AUDIT_CH), or a leadership change (LEADER_CH).

The likelihood of current campaign targets delisting due to performance issues (DELIST_PERF) is positively correlated with the campaign activist's past record in predicting delisting (LOG_PAST_%DELIST; correlation = 0.11, two tailed p<0.10). This is preliminary evidence that the targets of activist short sellers who have superior past performance in shorting firms that will be delisted are more likely to be delisted. The activist's past track record of targets that delist (LOG_PAST_%DELIST) is positively related to the measures of track record based on past targets' one-year market-adjusted returns. In particular, LOG_PAST_%DELIST is positively related to the percentage of the activists' past targets generating negative market-adjusted returns one year after campaign publications (LOG_PAST_%NEG1Y), and negatively related to the average of the activists' past targets' one-year market-adjusted return (PAST_AVG1Y). Finally, we see anonymous activists tend to have lower tenure and lower percentage of past targets delisting.

3. Empirical Results

In this section, we examine the persistence of activist short sellers' performance. We first examine whether there is persistence in the performance of activist short seller's short campaigns. Then we investigate whether investors recognize and incorporate an activist's past campaign record in reacting to the short campaign on the publication date.

3.1 Do Activist Short Sellers Exhibit Persistence in Performance?

To determine if activists experience persistence in the performance of their campaigns, we estimate the following model:

$$\text{PERFORMANCE}_{i,j,t} = \alpha + \beta \text{PAST\_PERFORMANCE}_{i,t} + \gamma \text{CONTROLS}_{j,t} + \varepsilon_{i,j,t} \qquad (1)$$

We estimate (1) using three performance measures: (1) the sign and magnitude of targets' returns following campaign announcements; (2) the sign of the targets' returns following campaign announcements: and (3) the delisting status of the target. We estimate equation (1) using OLS for the continuous measure of performance (i.e., the sign and magnitude of the target's excess returns). We estimate equation (1) using LOGIT for indicator variables (i.e., the sign of the target's excess returns and the target's delisting status). We also estimate equation (1) with and without the following control variables: LOG_SIZE, BTM, PRE_MOMENTUM, PRE_VOLATILITY, LOG_ANALYSTS, INST, LOG_TENURE, FRAUD, and ANON. In the tabulated results, we cluster the standard errors by activist; our inferences are unchanged if do not cluster the standard errors (not tabulated). Appendix A contains all variable definitions.

Panel A of Table 3 provides the results from estimating equation (1) using the target's market-adjusted return as the performance measure. Specifically, we regress the target's market-adjusted returns in one-year, three-month, and one-month windows starting on the campaign publication date on the activist's past records measured using targets' returns in the

corresponding (one-year, three-month, and one-month) windows. Regardless of the return

accumulation window examined or whether controls are included in the model, the estimated

coefficient on PAST_AVG is insignificant. These findings hold if we use raw returns instead of

market-adjusted returns (not tabulated). This result also holds in Panel B when we use an

indicator variable for whether the target experiences negative returns.

Taken together, these findings indicate that the past performance of the activist, as

measured by the mean excess returns to prior targets or the percentage of past targets that

experience negative returns, is not associated with the performance of his/her current

campaign.[15] This lack of persistence could be due to the lack of skill/ability of activist short

sellers or a mixed strategy of informative and opportunistic campaigns. It is also consistent with

notion that it is very difficult to persistently time the short correctly (Davis 2012), given the

substantial arbitrage risk of going against the long side. Further, noise traders and managers'

responses may limit the degree of price corrections in a specific window.

In order to abstract away from the appropriate window to calculate a returns-based

performance measure, we consider a performance measure based on whether the target delists in

Panel C. In contrast to the results in Panels A and B, we find that the estimated coefficient on

LOG_PAST_%DELIST is positive and significant, regardless of whether control variables are

included in the estimation.[16,17] The average marginal effect of LOG_PAST%_DELIST (based on

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[16] We take log of PAST_%DELIST in all our regressions to reduce potential effect of extreme values. All our results hold if we instead include PAST_%DELIST in the regressions. We do not include year fixed effects in the logit estimation results presented in Panel C because some sample years have zero delistings. Thus, including year fixed effects would reduce our sample size in these estimations by approximately one third.

[17] In untabulated analyses, we consider the activist's style in constructing the performance measures. Specifically, we calculate the track record of an activist based on past targets that are of similar size, in similar sectors and countries, and of similar underlying issues as the current target, and examine whether such style-adjusted track record predicts the performance of current target among similar targets. We continue to find no persistence in performance with return-based performance measures. We, however, find activists who have superior past performance in identifying targets in certain countries (or with certain underlying issues) that delist will perform better in identifying delisting targets in those countries (or with those issues) in the future.

the logit model with controls in column 2 of Panel C) is 0.0017 (untabulated), which indicates that a 100% increase in PAST%_DELIST will results in the likelihood that current target delists increasing by 1.7%. This effect is economically significant given the likelihood of target delisting is 7.6% in our sample. This significantly negative coefficient holds if we measure the past performance with a look-ahead bias in which we calculate the activist's performance based on whether the targets ever delist (rather than requiring that the past target delist by the time of the current campaign, results not tabulated). These results indicate that activist short sellers do exhibit persistence in performance: the current targets of activist short sellers who had a greater percentage of past targets that delist are more likely to delist in the future.

As discussed in Jagannathan et al. (2010), survival biases may affect estimations of persistence. To reduce the likelihood that our results are driven by survival bias, we follow Braun et al. (2017) and estimate our models using a subsample of activists who survived (proxied by activists who publish at least five campaigns).[18] As shown in Table 4, the inferences based on Table 3 hold in this subsample. Thus, the persistence in performance we identify is unlikely driven by survival biases.

Overall, the results in Tables 3 and 4 suggest that activist short sellers do exhibit persistence in performance in identifying targets that will delist. The fact that we find no persistence in the performance of short campaigns in predicting stock returns in pre-specified windows but do find persistence in their performance in predicting delisting is unusual. However, these conflicting findings may be due to the inherent difficulties in predicting the behavior of other traders (e.g., noise traders) and the impact of arbitrage or synchronization risk

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[18] In untabulated analyses, we find that, for activists who publish less than five campaigns, the likelihood that a campaign is an activist last campaign is positively related to the campaign target's one-year market-adjust return, suggesting that activists experiencing worse recent performance are more likely to exit the business. The significant relation between performance and exit rate disappears in the sample of activists who publish at least five campaigns. We interpret this evidence as support for the use of five campaigns as the threshold to address the survival bias.

(De Long et al. 1990; Abreu and Brunnermeier 2002). Taken together, our results suggest that superior activist short sellers possess the consistent skill/ability to identify targets with severe issues.

To probe this finding further, we examine whether an activist's past performance in identifying targets that will delist also predicts other outcomes for the current target. In Table 5, we consider the predictive ability of PAST_%DELIST for the following outcomes: a change in the target's leadership (LEADER_CH), a change in the target's auditor (AUDITOR_CH), being named in a class-action lawsuit (LAWSUIT), and the target's future earnings news. We estimate (1) using LOGIT with each of the outcome variables (LEADER_CH, AUDITOR_CH, and LAWSUIT) as the dependent variable and LOG_PAST%DELIST as the main variable of interest along with the controls included in Table 3 and 4. We find that the estimated coefficient on LOG_PAST%DELIST is significantly positive for LEADER_CH (coefficient = 1.4863, two-tailed $p<0.05$) and LAWSUIT (coefficient = 1.1517, two-tailed $p<0.10$), indicating that targets of activists with a higher percentage of past targets that delist are more likely to experience a change in management and more likely to be named in a class action lawsuit. In addition, while the estimated coefficient is insignificant for AUDIT_CH, it is significantly negative for the average quarterly earnings surprise over the four quarters subsequent to the initiation of the campaign.[19] This indicates that current targets of activists with a greater percentage of past targets that delist will report worse future earnings news in the future. We also examine the ability of PAST_%DELIST to predict the market-adjusted returns in the period following the campaign publication. We only find that LOG_PAST_%DELIST is significantly negative for CAR_0to20. The lack of significance for the longer windows once again indicates the difficulty

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[19] The sample size is lower for AUDIT_CH because certain independent variables (e.g., FRAUD = 1) predict AUDIT_CH perfectly and thus those observations are dropped in the logit estimation. Five observations are dropped when we use SUE_NEXTYR as the dependent variable because of missing data.

in predicting long-term returns of short campaign targets. Overall, the findings in Table 5 support the inferences in Tables 3 and 4 by documenting that the activist's track record in identifying firms that delist contains information about other measures of worse fundamental performance than current delisting.

3.2 Do Investors' Incorporate Activist Short Sellers' Past Performance?

The results presented in Table 3 indicate that one aspect of activist short sellers' performance, the percentage of past targets that delist, predicts the performance of their current campaign. In this section, we examine whether investors incorporate an activist short seller's past delisting track record when reacting to short campaign announcements. In particular, if investors understand that targets of activists with superior performance in identifying targets that delist are more likely to delist, the market reaction at the campaign announcement date should be more negative.

We investigate the market reaction at the campaign announcement date in Table 6. We regress the market-adjusted return on the publication date (CAR_0) or the two days starting on the publication date (CAR_0to1) on LOG_PAST_%DELIST, control variables, and year fixed effects. As shown in Table 6, the estimated coefficient on LOG_PAST%_DELIST is significantly negative (two-tailed $p < 0.01$) for both windows. The negative coefficient on LOG_PAST%_DELIST holds if we lengthen the window to one week (CAR_0to4, results not tabulated). The estimations indicate that if LOG_PAST_DELIST increases by one standard deviation (0.1612, not tabulated), CAR_0 (CAR_0to1) will decrease by additional 166 (163) basis points. This effect is economically significant given the short length of returns accumulation window. Consistent with the findings in Table 3, the other measures of

performance considered, PAST_AVG and PAST_%NEG, are not associated with the market reaction on the campaign announcement date (results not tabulated). This evidence suggests the market is able to identify which aspect of activist short sellers' performance is persistent and react accordingly.

In untabulated analyses, we also examine how complete the market reaction is on the campaign publication date. Specifically, we examine if the market-adjusted returns starting on the day after the campaign publication date is associated with PAST_%DELIST. We consider both a one-week (CAR_1to4) and one-month (CAR_1to20) windows. In these estimations, the coefficient on LOG_PAST_%DELIST is not significantly different from zero, suggesting that the market reaction on the publication date is efficient, and that no profitable trading strategy exists that involves taking a position *after* the announcement of the short campaign. Overall, these results indicate that the market reacts more negatively to campaigns initiated by activists with a greater percentage of past targets that delist.

3.3 Do Activist Short Sellers Benefit from Their Superior Track Record?

Our results indicate that activist short sellers do exhibit persistence in their ability to identify firms that delist, and the market incorporates their past performance in reacting to the campaign announcement. In this section, we examine whether activists capitalize on the greater market reaction to their superior ability/skill in identifying targets to short. Ideally, to investigate this question, we would examine the shorting patterns at the individual activist level. Unfortunately, data on short positions are not available at the individual trader level. Thus, we examine changes in aggregate short interest (ΔSI) in the periods before and after the campaign

publication date. Given the data available to examine this question, the findings discussed below should be viewed as indirect and preliminary.

Table 7 presents the results of regressing the change in aggregate short interest on LOG_PAST_%DELIST, controls, and year fixed effects. We find that in the one week *prior* to the campaign publication date, the change in the aggregate short interest (ΔSI_-5to-1) is positively associated with LOG_PAST_%DELIST (regression coefficient = 0.0173, two tailed p < 0.01). This finding indicates that in the period before the activist publicly announces the campaign, the increase in the short interest in the unannounced target is higher for those activists with a greater percentage of past targets that delist. This suggests that either the activist short sellers with superior track records build more short positions before campaign announcements, or they inform their clients (such as hedge funds) of the upcoming campaign announcements and these other participants build more short positions, or both. While we lack the more granular data to identify which party benefits, the evidence suggests that the short side as a whole is able to capitalize on activist short sellers' reputation. This profit opportunity provides an incentive for activist short sellers to engage in information discovering and initiating informative rather than manipulative campaigns (Banebou and Laroque 1992).[20]

In order to minimize the risks associated with holding a short position, we expect that this build-up of short positions in targets of certain activists is reversed as soon as the campaign is announced. We find, however, that the change in short interest on the campaign publication date (ΔSI_0) or in the week following the campaign publication date (ΔSI_0to4) is not associated

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[20] Daily short interest data compiled by Markit is a proprietary dataset that charges significant fees for real-time access. Even with real-time access, short positions opened on day t and settled on t+3 are not observable until t+3. Given this feature of the short interest data, the reverse causality that activist short sellers select targets because they observe ΔSI_-5to-1 is unlikely. Further, we find the results in Table 6 still hold after adding ΔSI_-5to-1 as an additional control, suggesting the market reacts to the signal in LOG_PAST%_DELIST rather than ΔSI_-5to-1.

with LOG_PAST_%DELIST.[21] The insignificant results could be due to the aggregate nature of the data: other market participants could take short positions following the campaign announcement while the activist and/or the activist's clients close out their short positions.

5. Conclusions

In this study, we examine persistence in the performance of activist short sellers in identifying firms to short. In contrast to prior work on mutual funds and security analysts, we first document that the average market-adjusted return of the activist's past targets does not predict the return of his/her current campaign target. Rather, we find evidence that the activist's past track record in identifying firms that delist predicts the likelihood that the target of the current campaign will delist. This finding holds even in a subsample of activists that survive. The evidence suggests that superior activist short sellers possess the consistent skill/ability to identify firms that delist, despite the lack of consistency in predicting targets' returns in pre-specified return accumulation windows. These seemingly conflicting results are nonetheless consistent with the notion that it is very difficult to consistently time shorts correctly due to the uncertainty in when prices will incorporate the bad news.

Consistent with persistence in the delisting measure of campaign performance, we find that investors react more negatively on the publication date to campaigns initiated by activists with a greater percentage of past targets that delist. We find that this more negative reaction is concentrated on the day the campaign is initiated; the market-adjusted return in the week or month after the publication date is not associated with the activist's past performance. The ability of the market to identify and efficiently react to activist short sellers' persistence in performance

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[21] The coefficient on LOG_PAST%_DELIST remains insignificant for ΔSI_1to4 (results not tabulated).

creates the potential for market forces (absent regulation) to discipline activist short sellers for issuing manipulative campaigns.

Finally, we find evidence that there is a greater increase in the aggregate short interest before campaigns announced by activists with a superior record in identifying firms that delist. This result suggests the short side as a whole (activist short sellers, their clients, and/or friends) is able to capitalize off superior activists' greater market reputation. This ability in turn provides an incentive for activist short sellers to maintain their reputation for superior performance. Overall, the paper sheds light on the behavior of activist short sellers and has broader implications in understanding the new form information intermediary in which investors act as intermediaries for each other.

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Appendix A
Variable Definitions

Variable	Definition
SIZE	Total assets for the target firm.
ANALYSTS	The number of analysts following the target firm.
INST	The number of shares held by institutional investors divided by total number of shares outstanding for the target firm.
BTM	The ratio of book value to market value for the target firm.
PRE_MOMENTUM	The cumulative raw return for the target firm over the [-180, -11] window, where t=0 is the campaign announcement date.
PRE_VOLATILITY	The standard deviation of the daily stock return for the target firm over [-180, -11], where t=0 is the campaign publication date.
CAR_0	The market-adjusted return for the target firm on day 0, where t=0 is the campaign announcement date.
CAR_AtoB	The cumulative market-adjusted return for the target firm over the [A, B] window relative to the campaign announcement date. Delisting returns are incorporated using the approach in Beaver et al. (2007).
NEG_AtoB	An indicator variable that equals one if the cumulative market-adjusted return for the target firm over the [A, B] window relative to the campaign announcement date is negative, zero otherwise.
DELIST_PERF	An indicator variable that equals one if the target company is delisted due to performance issues. We use CRSP delisting code 400, 460, and 490 (related to liquidation) and 500, 504-591 (related to performance) as delisting events due to poor performance.
LEADER_CH	An indicator variable that equals one if the target company undergoes a leadership change.
AUDIT_CH	An indicator variable that equals one if the target company undergoes an auditor change.
LAWSUIT	An indicator variable that equals one if the target company is named in a class action lawsuit.
FRAUD	An indicator that equals one if the campaign accused the target firm of ineffective roll-up, major business and accounting fraud, pyramid scheme, or other illegal practices, zero otherwise.
SUE_NEXTYR	The average quarterly earnings surprise (defined as actual earnings per share less the seasonal random walk forecast, scaled by the share price) of the target firm for the four quarter after the campaign publication date.

Appendix A, Continued
Variable Definitions

Variable	Definition
PAST_AVGC	The average of the excess returns to the activist short seller's past campaigns over one of three windows (C): one month (1M, CAR_0to20), three month (3M, CAR_0to60), or one year (1Y, CAR_0to252). To ensure past targets' returns are observable at the initiation of the current campaign, we only include past campaigns that initiated more one year before the date of the current campaign for all our track record measures.
PAST_%NEGC	The ratio of the number of an activist short seller's past campaigns whose targets experienced negative excess returns over window C to the total number of past campaigns. This ratio is measured using one of three windows (C): one month (1M, CAR_0to20), three month (3M, CAR_0to60), or one year (1Y, CAR_0to252).
PAST_%DELIST	The ratio of the number of an activist short seller's past targets being delisted due to performance issues (i.e., DELIST_PERF=1) to the total number of the activist's past targets.
TENURE	The tenure of the activist short seller, measured as the number of years between the year an activist is first founded (as listed in the Activist Insights database) and the year of the campaign publication. If year founded is missing, then the year of the first publication in the Activist Insights database is used.
ANON	An indicator that equals one if the campaign is announced by an anonymous activist short seller, zero otherwise.
ΔSI_AtoB	The change in short interest ratio over the [A, B] window relative to the campaign announcement dates. Short interest ratio is the number of shares shorted divided by the number of shares outstanding.

TABLE 1
Sample Selection Criteria and Descriptive Statistics

Panel A: Sample Selection Criteria

	N
Short campaigns targeting US listed firms from 2009-2018	1,123
Less: Campaigns from activist short sellers founded before 2009	(383)
Less: Follow-up campaigns	(155)
Less: Campaigns with no past campaigns issued by the activist	(194)
Less: Campaigns published after 2018	(59)
Less: Campaigns without sufficient data for control variables	(16)
Final sample	316

Panel B: Summary Statistics[a]

	Mean	Std. Dev.	25th %	Median	75th %
SIZE	1,492.233	4,943.017	56.454	225.293	700.861
ANALYST	4.547	5.279	0.000	3.000	7.000
BM	0.301	0.437	0.095	0.213	0.423
INST	0.460	0.368	0.080	0.399	0.835
PRE_MOMENTUM	0.519	1.011	-0.073	0.216	0.724
PRE_VOLATILITY	0.042	0.024	0.025	0.036	0.051
CAR_0	-0.040	0.092	-0.066	-0.026	0.004
CAR_0to20	-0.049	0.285	-0.183	-0.033	0.052
CAR_0to60	-0.070	0.299	-0.244	-0.061	0.104
CAR_0to252	-0.090	0.580	-0.427	-0.070	0.224
NEG_0to20	0.582	0.494	0.000	1.000	1.000
NEG_0to60	0.604	0.490	0.000	1.000	1.000
NEG_0to252	0.595	0.492	0.000	1.000	1.000
DELIST_PERF	0.076	0.265	0.000	0.000	0.000
AUDIT_CH	0.035	0.184	0.000	0.000	0.000
LEADER_CH	0.215	0.412	0.000	0.000	0.000
LAWSUIT	0.241	0.428	0.000	0.000	0.000
FRAUD	0.139	0.347	0.000	0.000	0.000
SUE_NEXTYR	0.127	0.091	-0.007	0.001	0.010
PAST_AVG1M	-0.125	0.128	-0.167	-0.114	-0.044
PAST_AVG3M	-0.171	0.137	-0.215	-0.151	-0.090
PAST_AVG1Y	-0.302	0.308	-0.403	-0.295	-0.169
PAST_%NEG1M	0.709	0.236	0.625	0.698	0.889
PAST_%NEG3M	0.749	0.201	0.667	0.771	0.845
PAST_%NEG1Y	0.768	0.226	0.698	0.800	0.909
PAST_%DELIST	0.104	0.217	0.000	0.000	0.100
TENURE	4.918	2.128	3.000	5.000	7.000
ANON	0.231	0.422	0.000	0.000	0.000

[a] All variables are defined in Appendix A.

TABLE 2
Correlation Matrix

	Variable[a]	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	CAR_0	1.00												
(2)	CAR_0to252	-0.02	1.00											
(3)	NEG_0to252	-0.04	-0.75***	1.00										
(4)	DELIST_PERF	-0.04	-0.13*	0.10	1.00									
(5)	AUDIT_CH	-0.04	-0.15*	0.09	0.01	1.00								
(6)	LEADER_CH	0.04	-0.18**	0.12*	0.05	0.24***	1.00							
(7)	LAWSUIT	-0.28***	0.03	-0.03	0.06	0.05	0.14*	1.00						
(8)	FRAUD	-0.16**	0.00	-0.01	0.02	-0.08	-0.12*	0.12*	1.00					
(9)	PAST_AVG1Y	0.02	-0.05	0.02	-0.03	-0.03	-0.13*	0.08	-0.11	1.00				
(10)	LOG_PAST_%NEG1Y	-0.03	-0.02	0.06	-0.02	0.08	0.18**	-0.06	0.06	-0.79***	1.00			
(11)	LOG_PAST_%DELIST	-0.11	0.04	-0.04	0.11*	-0.04	0.11	0.06	0.03	-0.50***	0.20***	1.00		
(12)	LOG_TENURE	0.08	-0.00	0.01	-0.07	-0.06	-0.05	-0.08	-0.09	0.13*	-0.11*	-0.03	1.00	
(13)	ANON	-0.08	0.02	-0.01	-0.04	-0.04	0.02	0.04	-0.05	0.09	0.06	-0.12*	-0.59***	1.00

[a] All variables are defined in Appendix A.
*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed test), respectively

TABLE 3
Persistence in Short Sellers' Performance (N = 316)

Panel A: Market-Adjusted Returns

Variable[a,b]	CAR_0to20		CAR_0to60		CAR_0to252	
	(1)	(2)	(3)	(4)	(5)	(6)
PAST_AVG1M	-0.0771	-0.1452				
	(-0.92)	(-0.55)				
PAST_AVG3M			-0.1432	-0.0556		
			(-1.33)	(-0.39)		
PAST_AVG1Y					-0.0553	-0.0419
					(-0.47)	(-0.30)
Controls	No	Yes	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Cluster S.E. by Author	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	-0.002	0.038	0.014	0.037	0.010	0.037
Model	OLS	OLS	OLS	OLS	OLS	OLS

Panel B: Sign of Market-Adjusted Returns

Variable[a,b]	NEG_0to20		NEG_0to60		NEG_0to252	
	(1)	(2)	(3)	(4)	(5)	(6)
LOG_PAST_%NEG1M	-0.0377	-0.1518				
	(-0.69)	(-0.20)				
LOG_PAST_%NEG3M			-0.6152	-0.7869		
			(-0.69)	(-0.92)		
LOG_PAST_%NEG1Y					0.8504	0.7111
					(0.97)	(0.68)
Controls	No	Yes	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Cluster S.E. by Author	Yes	Yes	Yes	Yes	Yes	Yes
Psuedo R-squared	0.008	0.022	0.025	0.051	0.027	0.069
Model	Logit	Logit	Logit	Logit	Logit	Logit

TABLE 3, CONTINUED
Persistence in Short Sellers' Performance

Panel C: Delisting Status

Variable[a,b]	(1)	(2)
LOG_PAST_%DELIST	2.0019 [*]	2.9069[**]
	(1.85)	(2.43)
Controls	No	Yes
Year Fixed Effects	No	No
Cluster S.E. by Author	Yes	Yes
Psuedo R-squared	0.020	0.194
Model	Logit	Logit

[a] All variables are defined in Appendix A.
[b] All t-statistics are based on two-tailed tests (in parentheses) and are calculated based on robust standard errors that are clustered by author.
[*],[**],[***] indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed test), respectively

TABLE 4

TABLE 4
Persistence in Short Sellers' Performance: Survival Bias (N = 300)

Variable[a,b]	(1) CAR_0to20	(2) NEG_0to20	(3) CAR_0to60	(4) NEG_0to60	(5) CAR_0to252	(6) NEG_0to252	(7) DELIST_PERF
PAST_AVG1M	-0.2271						
	(-0.74)						
LOG_PAST_%NEG1M		-0.1919					
		(-0.24)					
PAST_AVG3M			-0.0777				
			(-0.44)				
LOG_PAST_%NEG3M				0.4459			
				(0.42)			
AVG_PAST1Y					-0.0455		
					(-0.27)		
LOG_PAST_%NEG1Y						1.5280	
						(1.48)	
LOG_PAST_%DELIST							2.1857*
							(1.80)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	No
Cluster S.E. by Author	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted / Psuedo R-squared	0.0126	0.027	0.031	0.058	0.036	0.076	0.189
Model	OLS	Logit	OLS	Logit	OLS	Logit	Logit

[a] All variables are defined in Appendix A.

[b] All t-statistics are based on two-tailed tests (in parentheses) and are calculated based on robust standard errors that are clustered by author.

*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed test), respectively

TABLE 5
Track Record of Past Target Delisting and Other Future Outcomes

Variable[a,b]	(1) LEADER_CH	(2) AUDIT_CH	(3) LAWSUIT	(4) SUE_NEXTY	(5) CAR_0to252	(6) CAR_0to60	(7) CAR_0to20
LOG_PAST_%DELIST	1.4863**	-1.8551	1.1517*	-0.0245**	0.0554	-0.0587	-0.1094**
	(2.38)	(-1.02)	(1.87)	(-2.58)	(0.35)	(-0.91)	(-2.64)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	No	No	Yes	Yes	Yes	Yes
Cluster S.E. by Author	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Psuedo/Adjusted R-squared	0.411	0.130	0.036	0.117	0.037	0.028	0.002
Model	Logit	Logit	Logit	OLS	OLS	OLS	OLS
N	316	272	316	311	316	316	316

[a] All variables are defined in Appendix A.

[b] All t-statistics are based on two-tailed tests (in parentheses) and are calculated based on robust standard errors that are clustered by author.

*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed test), respectively

TABLE 6
Track Record of Past Target Delisting and Market Reaction (N = 316)

Variable[a,b]	(1) CAR_0	(2) CAR_0to1
LOG_PAST_%DELIST	-0.1031***	-0.1016***
	(-3.38)	(-3.52)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Cluster S.E. by Author	Yes	Yes
Adjusted R-squared	0.038	0.015
Model	OLS	OLS

[a] All variables are defined in Appendix A.
[b] All t-statistics are based on two-tailed tests (in parentheses) and are calculated based on robust standard errors that are clustered by author.
*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed test), respectively

TABLE 7
Track Record of Past Target Delisting and Short Positions (N = 218)

Variable[a,b]	(1) $\Delta SI\_{-5to\text{-}1}$	(2) ΔSI_0	(3) ΔSI_0to4
LOG_PAST_%DELIST	0.0173***	-0.0031	-0.0060
	(3.35)	(-0.52)	(-1.03)
Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Cluster S.E. by Author	Yes	Yes	Yes
Adjusted R-squared	0.119	0.093	0.130
Model	OLS	OLS	OLS

[a] All variables are defined in Appendix A.
[b] All t-statistics are based on two-tailed tests (in parentheses) and are calculated based on robust standard errors that are clustered by author.
*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-tailed test), respectively