# Hedge Fund Activists: Do They Take Cues from Institutional Exit?[♦]

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ABSTRACT

Hedge fund activists achieve substantial improvements in the performance and governance of target firms. These activists accumulate most of their large ownership in the days immediately before their campaigns while other institutions heavily sell the targets. We show that institutional exit triggers the emergence of activism. At the daily frequency, we identify a causal relationship between institutional selling and activist purchases. We use each institution's trading in non-target stocks as an instrument for its trading in the target. Our instrument is based on the observation that institution-specific funding needs, rather than target-specific information, explain most of the selling. Institutional sellers demand liquidity, allowing hedge funds to rapidly acquire shares with limited price impact and ultimately initiate a campaign at a lower cost. We formally show that sustained institutional selling significantly raises the odds of activist interventions, and hence plays an important corporate governance role.

Keywords: Shareholder activism, Corporate governance, Hedge funds, Institutional investors

JEL classification: G11, G12, G23, G34

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# 1. Introduction

Hedge funds have assumed the role of active monitors in the majority of shareholder campaigns since 2000. Hedge funds suffer from fewer conflicts of interest, face minimal regulatory restrictions, and have a better-aligned incentive structure than other institutional monitors such as mutual funds, pension funds, and labor unions (see Kahan and Rock, 2006; Gillan and Starks, 2007).[1] As a result, hedge fund activists have achieved significant improvements in the performance and governance of target firms, resulting in high abnormal returns (see Brav, Jiang, Partnoy, and Thomas, 2008; Becht, Franks, Mayer, and Rossi, 2008; Brav, Jiang, and Kim, 2012).[2]

Hedge fund activists typically target firms with large institutional ownership. The rationale for this is twofold: first, institutional investors are able to better evaluate the success of an activist intervention, facilitating a faster convergence of the target's share price to its improved fundamental value; second, institutional voting directly impacts a campaign's success in its more confrontational stages (see Gilson and Gordon, 2013). However, the literature has not addressed the role of institutions in the emergence of activism. On the one hand, hedge funds may enlist the support of other institutional investors before they start a campaign, which would imply that institutions and hedge funds trade in the same direction. On the other hand, we may expect the opposite if hedge funds instead take cues from institutional selling as a signal of shareholder discontent or simply as an opportunity to trade in favorable market conditions.

In this paper, we find that institutions heavily sell target shares before an activist campaign and their selling has a causal effect on the activist's decision to accumulate a position and engage in activism. We identify this causal relationship using each institution's trading in non-target stocks as an instrument for its trading in the target. Our instrument relies on the observation that institutions that sell most target shares also disproportionately sell non-target stocks, suggesting that their trading is motivated by their funding needs rather than information about the targets. Thus, our results establish that even non-informational institutional exit plays an important governance role by inducing activist interventions.

Our paper complements recent work in the corporate governance literature, which argues that large institutional shareholders add value even without direct intervention in firm operations. Edmans (2009) develops a theoretical model in which a privately informed blockholder trades on negative news, pressuring management to improve long-term investment. Edmans and Manso

[1] Karpoff (2001), Yermack (2010) and others conclude that institutional activism by pension funds, mutual funds, and unions has had limited impact on firm governance and performance.

[2] Klein and Zur (2009) show that hostile hedge funds achieve higher returns than other entrepreneurial activists and Clifford (2008) demonstrates that hedge funds earn higher returns from their activist holdings than their passive investments.

(2011) show that a multiple-blockholder structure increases the effectiveness of governance through trading while Kahn and Winton (1998) illustrate that a blockholder's information precision raises his incentive to speculate. Empirically, McCahery, Saunter, and Starks (2008) present survey evidence that exit is the most prevalent institutional governance mechanism while Parrino, Sias, and Starks (2003) and Chen, Harford, and Li (2007) demonstrate its role in the contexts of CEO turnover and acquisitions.

The above papers consider blockholders as informed traders who impound their private information into stock prices as they exit. A common assumption is that block size is positively associated with the shareholder's incentives to gather and trade on private information. In this paper, we focus on a different type of exit in which funding liquidity, rather than fundamental firm-specific information, induces institutions to sell. This selling moves prices below fundamental value allowing the activist to initiate a campaign at a lower cost.[3] Our findings thus provide empirical support for Maug's (1998) theoretical argument that liquidity improves a shareholder's incentives to become a monitor by allowing him to share the costs of an intervention with other investors.[4] However, unlike Maug's (1998) model in which liquidity is exogenously determined, our setup emphasizes the role of institutional selling in limiting the price impact of hedge fund purchases.

Our analysis starts by documenting that the average activist hedge fund purchases the majority of its initial stake (4.2% of the target's outstanding shares) in the open market in the two months before the public announcement of activist intentions. During the same period, the institutions in our sample sell a large fraction of their target holdings (1.5% of outstanding shares).[5] On the day the activist crosses the 5% regulatory threshold, the hedge fund purchases on average 1.02% and institutions sell a net of 0.34% of the target's outstanding shares. The combined trading of hedge funds and other institutions accounts for 61.59% of the market volume on that day, suggesting that they trade (indirectly) with each other.

[Insert Figure 1]

We observe that the trading of hedge funds and other institutions is highly synchronized. Mutual and pension funds start selling about eight months before the activist filing but their selling dramatically accelerates during the 60 days closer to the filing. This pattern of trading is widespread among the campaigns in our sample, suggesting that institutional selling and hedge fund purchases may not be coincidental but rather economically related.

[3] Edmans, Goldstein, and Jiang (2012) demonstrate a similar mechanism in the context of mergers and acquisitions.
[4] Gantchev (2012) provides empirical evidence that the costs of activist monitoring are substantial.
[5] The institutional trade data are from Ancerno (formerly known as the Abel/Noser Corp.) and include a subset of mutual and pension funds. For a typical stock, these institutions account for up to 20% of its total CRSP volume.

[Insert Figure 2]

Our examination of the causal effect of institutional trading on hedge fund purchases of target shares relies on three identification steps. First, matching daily institutional volume to net hedge fund trades, we show that hedge funds are significantly more likely to trade on days of net institutional selling than on other days. Moreover, the activist purchases a larger quantity of shares when institutional selling volume is higher. The daily frequency of our data makes it unlikely that this relationship is spuriously generated by the aggregation of trades over multiple days.

Second, we investigate whether institutional selling is motivated by fundamental firm-specific news or institution-specific liquidity needs. We find that only a few institutions (out of many that trade in a target stock) are responsible for almost all institutional selling on the event day and the majority of the selling in the 60 days before a campaign. We examine these institutions' trading in non-target stocks and find that they sell a disproportionately large fraction of their other holdings, suggesting that their trades are liquidity motivated. Based on this observation, we establish a robust positive (negative) relationship, at the institution level, between the probability of selling (buying) the target stock and the fraction of non-target stocks that the institution sells.

Third, we formally establish a causal link between institutional sales and hedge fund purchases by instrumenting *each* institution's daily trading in the target by its trading in *non-target* stocks. We begin by calculating the expected probabilities that each individual institution will sell and buy the target stock on each trading day. We then multiply these probabilities by the average trade size and sum the product across institutions to obtain our instruments – the expected daily sell and buy volumes. Our results show that the instrumented institutional selling is statistically and economically significant in determining hedge fund purchases. Since our instruments are institution-specific, rather than target-specific, we achieve identification of the causal flow from institutional selling to hedge fund buying.

To understand the economic mechanism, we study the market conditions generated by liquidity-motivated institutional trading and how these conditions affect the hedge fund's acquisition of target shares. We undertake a two-step analysis. In the first step, we use instrumented institutional selling and buying volumes in the period from 240 to 90 days before the campaign to find the expected impact of institutional trading on the target's returns, turnover, and liquidity. In this period, hedge fund trading is light, allowing us to better isolate the impact of institutional trading on the market. In the second step, we use the first-step estimates to calculate the market conditions that would have resulted from institutional trading and relate these conditions to hedge fund purchases in the 60 days before the file date.

Our results show that the exogenously identified institutional selling lowers prices and increases turnover and these conditions induce larger hedge fund purchases. The ability to rapidly acquire shares with limited price impact, by providing liquidity to institutional sellers, is an important determinant of the hedge fund's decision to initiate a campaign. In a sample of firms matched on the characteristics shown in the literature to influence targeting, we find that a one standard deviation increase in institutional selling volume raises the odds of becoming an activist target by approximately 60%.

Our paper contributes to several strands of the finance literature. First, we directly contribute to the growing literature on hedge fund activism (see Brav, Jiang, and Kim, 2010, for a survey). Previous work has shown that institutional investors are important in the evolution and success of an activist campaign. We provide novel evidence that institutional investors also play a critical role in the activist's decision to initiate the campaign in the first place. Specifically, we find that institutions heavily sell target shares in the two months leading up to the filing date and their selling has a causal effect on the hedge fund's decision to accumulate a position and engage in activism. Our findings imply that of several firms with characteristics shown in the literature to be associated with becoming an activist target (such as size, book-to-market, etc.), the specific choice and time of entry ultimately depend on the prevailing market conditions induced by institutional selling.

The recent literature has established that liquidity is beneficial for corporate governance. Norli, Ostergaard, and Schindele (2010) show that the relationship between firm performance and activism is stronger for firms with liquid stocks. Edmans, Fang, and Zur (2012) demonstrate that stock liquidity improves governance by both direct intervention and exit. Our findings suggest that this improved liquidity may in fact be the result of activist hedge funds purchasing target shares from distressed institutions, whose selling would otherwise generate significant price impact.[6]

Second, our paper complements the broader corporate governance literature, particularly on the role of large shareholders in monitoring a firm. In this literature, blockholders use either voice or the threat of exit to force change (see Edmans, 2009). Institutional exit disciplines managers by lowering the firm's stock price to the fundamental value that would prevail in the absence of the institutions' demanded changes. Hence, the functioning of institutional exit generally relies on the notion that blockholders trade based on their private information. In contrast, our paper focuses on liquidity motivated institutional selling and shows that even this type of exit plays an important governance role by facilitating the emergence of hedge fund activism.

[6] Collin-Dufresne and Fos (2012) provide evidence of selection bias in liquidity measures due to the endogenous timing of informed trading. The authors treat Schedule 13D filers as informed traders and find that activist trading is associated with better liquidity of target stocks.

Third, we also contribute to the literature on the trading behavior of hedge funds and their role as liquidity providers.[7] Chen et al. (2008) provide indirect evidence that hedge funds profit from front-running distressed mutual funds. Shive and Yun (2013) find that hedge funds profitably trade on quarter-ahead predicted mutual fund flows, especially in small and illiquid stocks. Unlike these authors, we focus on hedge fund activism and rely on daily trading data to identify the causal effect of institutional trading on the hedge fund's purchase and targeting decisions. Campbell, Ramadorai and Schwartz (2009) infer daily institutional trading from TAQ data and show that institutions demand liquidity, especially when they sell. Similarly, we find that non-hedge fund institutions demand liquidity when disposing of target shares, which helps activist hedge funds acquire a large number of shares with limited price impact.

Finally, our findings have important public policy implications regarding the disclosure requirements for blockholder ownership. The US Securities and Exchange Commission (SEC) is currently considering reducing the ten-day period for reporting beneficial ownership in Schedule 13D to protect investors from the arguably abusive trading of 'aggressive' activists. Our results suggest that doing so will provide limited benefits to investors but will significantly lower the incentives for a blockholder to accumulate a large stake in a firm and monitor its operations. Hedge funds acquire a large fraction of their ownership by providing liquidity to distressed institutions, which we show continue to sell target shares even after the campaign announcement. On the other hand, our back-of-the-envelope calculation shows that an average activist derives approximately 7% of gross returns from his trading in the ten-day reporting period. Without this return, value-enhancing campaigns would have been less financially viable and hence more limited in number.

The remainder of the paper is organized as follows. Section 2 describes the data used in this study. Section 3 summarizes hedge fund and non-hedge fund institutional trading in target and non-target stocks, and Section 4 investigates the accumulation of block positions by activist hedge funds. In Section 5, we construct instruments for institutional trading and establish a causal link between institutional selling and hedge fund purchases. Section 6 describes a two-step instrumental variables analysis of the effects of institutional trading on market conditions and their impact on hedge fund purchases. Section 7 provides evidence that institutional selling raises the likelihood of activism and discusses public policy implications of our findings. Section 8 concludes.

[7] Another strand of the hedge fund literature considers the relation between the ownership of hedge funds and other institutional investors (see Griffin and Xu, 2009; Jiao, 2012; and Ben-David, Franzoni and Moussawi, 2012).

## 2. Data

Our analysis combines three unique datasets covering hedge fund activist campaigns, daily hedge fund trades in activist targets, and high frequency trades by non-hedge fund institutions.

The list of activist campaigns comes from Gantchev (2012) who uses data from SEC Schedule 13D, preliminary and definitive proxy statements, and SharkRepellent.net to construct a comprehensive data set of hedge fund activist campaigns in 2000-2007. The activist sample consists of 1,191 distinct campaigns involving 981 unique targets and 130 hedge fund families.

Any investor who acquires more than 5% of the voting stock of a public company with the intention of influencing its operations or management must file Schedule 13D with the SEC within 10 days of crossing the ownership threshold. As part of the filing, activists are required to report all transactions in the target's shares in the 60 days before the filing date. We manually collect the date of each reported transaction; the amount of shares purchased or sold; the price per share and the type of each transaction (open market, private or other) for the original sample of activist campaigns. We have the hedge fund transaction history for 813 of the activist events; the remaining campaigns do not provide transaction details because of previous Schedule 13G filings, private placement or IPO distributions, missing share or price information, etc.[8]

We combine the hedge fund transaction data with high-frequency institutional trading data from Ancerno (formerly known as the Abel/Noser Corporation).[9] Ancerno provides transaction cost analysis to mutual funds, pension plan sponsors, and brokers representing (on average) 13.47% of total CRSP volume during 2000-2007. The dataset covers the trading activity of 914 unique client institutions including such household names as Fidelity, Vanguard, AllianceBernstein, etc. The data include the execution date and time; the stock ticker and number of shares traded; the price, commission and taxes per share; the direction of each trade and an identifier for the trading institution. As discussed in Puckett and Yan (2011), the Ancerno data suffers from no significant survivorship or selection biases.

We document that about 70 unique institutions sell and 56 institutions buy the average target stock in the 240 days before the start of a campaign.[10] However, the top 5 sellers (buyers) account for about 68% (62%) of the total institutional sell (buy) volume in the 60 days before the public announcement of a campaign. These top traders include mostly mutual funds such as Barclays Global Investors, State Street, Vanguard, Putnam, AllianceBernstein, and Wellington

[8] The 13G filing is considered a more passive version of the 13D, and has fewer reporting requirements. Activist practices are not permitted by 13G filers unless they refile as 13D owners.
[9] See Chemmanur, He, and Hu (2009) and Puckett and Yan (2011) for a broad description of the data.
[10] We conservatively define an institution as the unique combination of client code and client manager code from Ancerno. However, multiple client manager codes are typically associated with the same client code.

Management.

We obtain stock market data from the Center for Research in Security Prices (CRSP) and accounting data from Compustat. Our final sample consists of 643 activist campaigns with hedge fund and institutional trading data as well as CRSP price and share information.

## 3. Institutional trading in target and non-target stocks

The typical analysis of institutional ownership in the literature uses data from the Thomson Reuters 13F Institutional database, which contains the quarterly ownership reports of institutions reporting to the SEC. Tracing the identity of 13F institutional owners around the start of activist campaigns in 2000-2007, we find that the mean (median) ownership of hedge funds increases by 3.94% (4.44%) of shares outstanding while the ownership of other institutions decreases by 5.43% (5.31%) (see Figure 3). This finding suggests a significant churning of institutional investors before the start of a campaign, with hedge funds replacing other institutions as major blockholders of target firms.

[Insert Figure 3]

A natural question is whether hedge fund purchases are economically related to the disposal of target shares by other institutions. Several explanations are plausible: (i) target-specific information may cause hedge funds to buy and other institutions to sell; (ii) hedge fund purchases may cause other institutions to sell; or (iii) institutions may sell for exogenous reasons and hedge funds may simply provide liquidity. As shown below, activists accumulate the majority of their ownership in the target in the 60 days immediately before the campaign. Consequently, differentiating among these alternatives using quarterly 13F data is problematic.

### *3.1. Hedge fund trading in target stocks*

The daily transaction data we use in this study allow us to investigate the manner in which hedge fund activists accumulate their positions in target firms. The analysis in this section focuses on the 60 days before the public announcement of a campaign in a Schedule 13D filed with the SEC.

Table 1 summarizes the trading in target stocks by 643 activist hedge funds in 2000-2007. The trading volume of our sample of activists represents 15.78% of the total CRSP volume in the shares of the average target. On the date that the hedge fund crosses the 5% regulatory threshold

(event date), the activist's trades comprise 41.24% of the target's total market volume.

[Insert Table 1]

Almost all hedge fund purchases of target shares (mean 97.51%, median 100%) are executed in the open market in a small number of large trades. In the two months before the start of a campaign, the average activist purchases 4.25% of the target's outstanding shares representing 61.89% of the total ownership of the hedge fund on the filing date. About one-third of activists acquire more than 5% of the target's outstanding shares in this period (untabulated).

Hedge funds trade very actively on the event date. On that single day, the hedge fund activists acquire on average more than 1% of the target's outstanding shares representing 13.68% of their total ownership at the start of the campaign. Almost all of these transactions are executed in the open market and are very large in size (the mean (median) number of trades is 14 (2)). This raises the question whether these large purchases are arbitrarily decided or driven by certain market conditions. In addition, hedge funds continue to purchase shares after crossing the 5% ownership threshold and accumulate another 1.28% of outstanding shares until the public announcement of their activist intentions.

We also document a significant price run-up in the 60 days before the start of a campaign. The average purchase price in that period is 94.12% of the target's price on the filing date. On the event date, activists acquire shares at an average discount of 2.42% to the price on the filing date. Surprisingly, the large volume of hedge fund purchases on the event date (more than 1% of outstanding shares) does not seem to have significant price impact. The difference in the average prices between the event day and the 10-day period until the filing date is only 1%. We explore whether institutions play a role in limiting the price impact of hedge fund purchases in Section 6.

Figure 4 clearly shows that the average cumulative abnormal returns (CARs) of targeted stocks turn significantly negative in the 240 days leading up to the start of a campaign. This period is characterized by heavy non-hedge fund institutional selling. Consistent with prior evidence in the literature, we also observe a significant price run-up in the 60 days before a campaign, especially in the 10 days between the event and filing dates. This coincides with the accumulation of the hedge fund's position in the target.

[Insert Figure 4]

*3.2. Institutional trading in target stocks*

The net volume of institutional trades turns negative about 240 days before the public announcement of a campaign but accelerates in the 60 days in which the hedge fund activist acquires the majority of his ownership in the target. Table 2 describes in detail non-hedge fund institutional trading in activist targets in 2000-2007.

The trading volume of our sample of mutual and pension funds represents 13.46% of the average target's market volume in the period from t-240 to t-60 days before the campaign and 14.36% in the 60 days to the filing date. Adding the trading volume of hedge fund activists from Table 1, we find that trading by both institutional groups accounts for 30.14% of the target's market volume in the 60 days before the campaign and 61.59% of the market volume on the event day. The large fraction of trading volume represented by our sample of institutions implies that these two market players trade indirectly with each other.

[Insert Table 2]

Non-hedge fund institutions sell on average a net of 2.52% of a target's outstanding shares in the 240 days before the activist's SEC filing. The majority of this selling (1.50% of shares outstanding) occurs in the 60 days before the filing date. On the event day, these institutions sell a net of 0.34% of the target's outstanding shares. Our sample of mutual and pension funds seem to be providing a large proportion of the shares purchased by the activist on that day.

The mean number of selling institutions exceeds the mean number of buying institutions in all event periods. On the event day, the median number of selling institutions is 2 and the median number of trades per institution is 1. The largest single seller represents 70% of total institutional sell volume on that day (untabulated). For most campaigns, only one or two institutions are responsible for the majority of trading on the event day. We interpret this as evidence that institution-specific (rather than target-specific) events may be driving institutional trading.

We further investigate the determinants of institutional trading in activist targets by tracing the activity of the top sellers and buyers of target stocks in the period between 240 days before and 30 days after the start of a campaign. Table 3 presents a breakdown of the results.

[Insert Table 3]

In Panels A and B, we report the combined trading activity of the top two (event-day) sellers and buyers of target stocks. On the event day, the top two sellers dispose of 0.44% and the top two buyers purchase 0.13% of the average target's outstanding shares. Compared to the total institutional selling of 0.46% and buying of 0.12% of shares outstanding (Table 2), the trading of

the top two institutional buyers and sellers accounts for virtually all of the institutional trading activity on the event day.[11]

In the 60-day window to the filing date, the top two (out of an average of 40) selling institutions dispose of 1.02% of the target's outstanding shares. Compared to the total institutional selling of 4.21% of outstanding shares (Table 2), the trading of these top sellers accounts for close to one-quarter of all selling. In the same period, the top two (out of 30) institutional buyers purchase 0.53% of shares outstanding, accounting for about 20% of aggregate institutional purchases.

The results so far suggest that almost all of the institutional selling on the event day and one quarter of the selling in the 60 days before the campaign is driven by only two institutions (out of an average of 40 institutions that trade during that window). This makes it unlikely that stock-specific news motivates institutional trading. In the next section, we provide evidence that selling institutions are relatively more distressed than the average trader, as they also sell a higher fraction of non-target stocks. Further, the top two sellers continue to dispose of target shares in the 30 days after the public announcement of the campaign, selling an additional 0.38% of the target's outstanding shares.

The last two panels of Table 3 report the trading activity of the top 5 institutional sellers and buyers of target stocks (determined during the sixty days before the filing date). The top 5 sellers account for 68% (=2.86/4.21) of the total institutional selling and the top 5 buyers represent 62% of the total institutional buying in the 60 days before the campaign. These results confirm that only a handful of institutions are responsible for the majority of trading in target stocks.

### *3.3. Institutional trading in non-target stocks*

To further investigate the motivation of mutual and pension funds to trade in activist targets, we study their trading in non-target stocks. We rely on the finding of Coval and Stafford (2007) that funds experiencing large inflows (outflows) tend to buy (sell) the majority of their stocks. However, unlike Coval and Stafford (2007), we do not have flow data at the daily frequency; therefore, we infer institutions' funding needs by studying their trading behavior across a large set of stocks.

[Insert Table 4]

[11] Note that the numbers of campaigns in calculating these statistics are different, as not all campaigns have institutional sellers and buyers on the event day.

Table 4 presents the trading in *non-target* stocks of the top 2 and top 5 buyers and sellers of *target* stocks. Comparing the top 2 event-day sellers (in Panel A) to the top 2 event-day buyers (in Panel B), we observe a significant difference in both the fraction of sell principal (measured as the total sell principal divided by the combined buy and sell principal) and the proportion of stocks sold. On the event day, the top two sellers sell 56% of their non-target stocks measured in terms of dollar principal and 58% in terms of number of stocks. On the other hand, the top two buyers sell only 31% of their other stocks measured in terms of dollar principal and 28% in terms of number of stocks. The same pattern exists in all other event windows.

For robustness, Panels C and D report the trading activity in non-target stocks of the top 5 sellers and buyers of the target in the sixty days leading up to the filing date. The results are consistent with our previous findings – the selling activity of the top 5 sellers of target stocks represents a significantly larger portion of their total principal and stocks traded. The widespread selling of the top sellers of target stocks suggests that these funds are relatively more distressed and trade for liquidity reasons. These institutions continue to sell in the thirty days following the public announcement of activism. Consequently, institutional selling in the days before a campaign is likely not driven by target-specific information.

## 4. Accumulation of block positions by activist hedge funds

### *4.1. Hedge fund purchases as a function of institutional trading*

The combined trading of our sample of hedge funds and other institutional investors accounts for 61.59% of the target's market volume on the event day, indicating that they trade indirectly with each other in the open market. Moreover, only a few institutions are responsible for most institutional selling on the event day and two-thirds of the selling in the sixty days before the campaign. Since these sellers also sell the majority of their non-target stocks, we argue that these institutions are relatively more distressed and potentially trade for liquidity reasons.

Figure 5 reveals that the strong negative correlation between the daily trading of hedge funds and non-hedge fund institutions is not restricted to a subsample of the campaigns. We sort the 643 campaigns with available trading data into quartiles based on the total number of shares outstanding purchased by the activist hedge fund during the 60 days leading up to the filing date (Q1 includes the campaigns with the highest amount of hedge fund purchases). All four plots show the same high synchronicity in the trading patterns of hedge funds and other institutions as Figure 1. In all four quartiles, we observe a strong negative correlation in trading volumes, with the first and last quartiles having the highest negative correlations (-0.87 and -0.57, respectively).

[Insert Figure 5]

We next perform a multivariate analysis of the relationship between institutional trading and the hedge fund's acquisition of target shares. Table 5 presents the results of several 'naïve' specifications (we conduct instrumental variables analysis in Section 5). In Panel A, we report logistic regressions with a dependent variable equal to one if the activist hedge fund trades on a trading day and zero otherwise. In Panel B, we present OLS estimation where the dependent variable is the daily net hedge fund volume as a percentage of shares outstanding.

[Insert Table 5]

We use two indicator variables to denote days with non-hedge fund institutional net selling and net buying (in Column 1), or continuous covariates measuring the ratio of institutional selling (buying) volume to outstanding shares (in Columns 2-5).[12] As controls, we include the target's lagged daily abnormal return and turnover, lagged daily hedge fund trading as well as VIX.[13] We calculate abnormal returns by the market-model adjustment approach, in which the CRSP value-weighted index is used as the market portfolio. The estimation period is from 600 to 240 days before the file date. Abnormal turnover is calculated by subtracting the mean turnover in the estimation period from the target's daily turnover. For campaign-level controls, we use cumulative abnormal returns (CAR), cumulative abnormal turnover (CAT), and cumulative abnormal Amihud ratio (CAA) in the early period from t-240 to t-60 in some specifications and campaign fixed effects in others.[14] We also use robust standard errors, clustered by campaign, in all regressions.

Panel A of Table 5 reports logistic regressions estimating the probability of observing a daily hedge fund trade. Each observation is a campaign-day. Column (1) uses indicators for non-hedge fund institutional net selling and net buying as the main regressors. Both institutional net selling and net buying are positively correlated with contemporaneous hedge fund trading and highly statistically significant (at 1%). In terms of economic magnitudes, the odds of hedge fund trading are 64% higher on days of net institutional selling and 37% higher on days of net institutional buying, compared to days with no institutional trading.

In Column (2), the main regressors are institutional selling and buying volumes as a percentage of shares outstanding. Our results confirm that hedge funds are significantly more likely to trade on days with high institutional selling volume. However, unlike the results in Column (1),

[12] We use the selling and buying volumes directly, as opposed to the net volume, to allow for potentially asymmetric impacts of selling and buying, and to capture the overall amount of trading.
[13] Nagel (2012) uses a reversal strategy to proxy for the returns from liquidity provision and shows that the time variation in this strategy can be predicted with the VIX index.
[14] Following Acharya and Pedersen (2005), we winsorize Amihud ratios at 0.3.

institutional buying volume has no effect. This suggests that hedge funds are more likely to trade on days of net institutional buying only when institutional selling is also high on those days.

Column (3) includes controls for the target's lagged abnormal return and turnover as well as five lags of daily hedge fund trading. Institutional selling is still positively correlated with hedge fund trading and statistically significant at 1%. A one-standard deviation increase in institutional selling volume increases the odds of hedge fund trading by 19%. Institutional buying volume is negatively correlated with hedge fund trading but not statistically significant.

Columns (4) and (5) repeat the analyses in Columns (2) and (3), with campaign fixed-effects replacing CAR, CAT, and CAA during t-240 to t-60 as campaign-level controls. Institutional selling remains statistically significant at 1% and its economic magnitude increases – a one-standard deviation increase in institutional selling volume raises the odds of hedge fund trading by 26% (Column (5)).

Panel B of Table 5 reports OLS estimates of the effect of institutional trading on net hedge fund trading volume. The sets of regressors are the same as in the comparable columns in Panel A. Column (1) shows that hedge funds purchase 0.05% (of shares outstanding) more on days of net institutional selling. No significant effect is observed on days of net institutional buying. Across the other specifications with continuous trading regressors, a one percent increase in institutional selling volume is associated with a 0.3-0.4% (of shares outstanding) increase in hedge fund daily purchases, statistically significant at 1%. Institutional buying volume is statistically insignificant.

So far, our results clearly show that hedge funds are significantly more likely to trade on days of net institutional selling than on days of net institutional buying or no trading. In addition, the activist purchases a larger quantity of shares when institutional selling volume is higher. To establish a causal relationship between institutional selling and hedge fund purchases, we perform an instrumental variables analysis in Section 5.

### *4.2. Persistence of hedge fund and institutional trading*

We measure the persistence of hedge fund and institutional trading by regressing measures of trading activity on their lags. We use five lags to reflect the number of trading days in a week. We also include campaign fixed effects and cluster standard errors by campaign. Table 6 reports the results.

[Insert Table 6]

As expected, both hedge fund trading volume and institutional selling and buying volumes are positively serially correlated. Column (1) reports the estimates of a logistic regression with a dummy for daily hedge fund trading as the dependent variable. Column (2) reports OLS estimates with hedge fund volume as the dependent variable. Both specifications show significant persistence of hedge fund trading for up to four lags.

Columns (3) and (4) of Table 6 report OLS coefficient estimates for two regressions with institutional selling and buying volumes, respectively, as dependent variables. We find significant persistence in both selling and buying volumes for up to four lags. Current institutional selling (buying) volume is also negatively correlated with lagged buying (selling) volumes. More importantly, institutional trading is generally not significantly correlated with lagged hedge fund trading, and neither is the reverse.

## 5. Identification

*5.1. Institutional trading of non-target stocks as an instrument*

Table 4 reveals that the top sellers of target stocks are also likely to sell more of their other holdings, suggesting that funding needs may be driving institutional trading in activist targets. As a result, we use *each* institution's trading in other *non-target* stocks to construct an instrument for its trading in target stocks. Our goal is to tease out the institutional trading that is exogenous to target-specific information and not caused by hedge fund trading.

Figure 6 presents some preliminary evidence supporting the intuition behind this instrument. We plot the percent of days on which institutions sell or buy target stocks as a function of their fraction of non-target stocks sold measured in terms of dollar principal (top panel), fraction of non-target stocks sold measured in terms of number of stocks (middle panel), and percent of trading days during the sample period (bottom panel).

[Insert Figure 6]

Consistent with the results in Table 4, institutions whose selling represents a larger fraction of their total non-target dollar principal or stocks traded are also more likely to sell the target stocks. Conversely, institutions whose buying constitutes a larger fraction of their total non-target dollar principal or stocks traded are also more likely to buy the target stocks. The extreme deciles in the top two panels often show non-monotonicity of these effects, as the highest and lowest fractions of sell principal and stocks sold sometimes involve just one other stock. In this

case, the trading is likely specific to one particular non-target stock and thus unrelated to the target stocks.

The last (right-most) bars in the top two panels show that when institutions do not trade other (non-target) stocks, they are also unlikely to trade the target stocks. In addition, the bottom panel shows that institutions that trade more in general are also more likely to trade the target stocks, both buy and sell.

Overall, the evidence presented in Figure 6 implies that an institution's aggregate trading in non-target stocks may serve as an instrument for its trading in the target stocks.

*5.2. Instrumental variables analysis*

We begin constructing instruments for institutional selling and buying volumes by estimating the propensity that *each* institution will sell, buy, or not trade the target stock as a function of its trading in other *non-target* stocks. This construction uses several variables suggested by our prior findings: (i) a dummy that equals 1 if the institution trades any other stock and 0 otherwise, (ii) the interaction between the dummy in (i) and the fraction of sell principal or stocks sold, (iii) a dummy that equals 1 if the institution only trades one other stock and 0 otherwise, and (iv) the fraction of trading days during the sample period that the institution trades any stock. The variables (i)-(iii) vary over time while (iv) is a constant characteristic of each institution. In all specifications, we control for the institution's lagged trading in target and non-target stocks, market returns, and VIX.

Table 7 reports the results. The specifications in Panel A employ multinomial logistic functions and are estimated by maximum likelihood. Buy and sell are considered jointly, with no trading as the reference outcome. We use CAR, CAT, and CAA during the earlier period from t-240 to t-60 as campaign-level controls. The specifications in Panel B are linear and are estimated by OLS. Propensities to buy and sell are separately estimated and are not bounded between 0 and 1. We include campaign fixed-effects in the OLS regressions. In both Panel A and Panel B, we cluster standard errors by campaign.

[Insert Table 7]

As a measure of sell fraction, we use the fraction of sell principal in Columns (1) and (2) of Panel A and the fraction of stocks sold in Columns (3) and (4). Both models fit the data well (with pseudo $R^2$ of 25% and 27%, respectively), and the results are essentially the same. Consistent with the univariate findings in Figure 6, an institution is more (less) likely to sell

(buy) the target stocks if it sells a larger fraction of non-target stocks. These effects are highly statistically significant. Moreover, an institution is more likely to sell and buy the target stocks if it also trades other (non-target) stocks.

The coefficients of the lagged covariates show that an institution is likely to trade the target stock in the same direction as it did on the preceding day. The effects of its trading in non-target stocks partially reverse on the following day. As for the control variables, we find that an institution is more likely to buy when the market return is high, and less likely to buy or sell when VIX is high. Finally, the results in Panel B confirm those in Panel A, indicating that the economic relationships we identify are robust to changes in functional form.

We use the estimates in the first two columns of Panel A in Table 7 to obtain the predicted propensities that *each* institution will sell and buy *each* target stock on *each* trading day. We then multiply the predicted sell and buy probabilities for each institution by its average daily selling (buying) volume calculated using only the days on which it sells (buys) each target stock. Then, we sum these products across all institutions with selling or buying probabilities in the top 20% on each day to obtain the expected aggregate selling and buying volumes. (As Table 3 shows, only a few institutions are responsible for the majority of trading in the target stocks.) We use these expected institutional volumes as instruments to identify the causal relationship between institutional trading and hedge fund purchases.[15]

Table 8 reports the two-stage least squares (2SLS) estimates. Columns (1)-(2) and (4)-(5) present the first stage estimates for institutional sell and buy volumes while Columns (3) and (6) report the second stage regressions. Both model specifications are exactly identified and pass the weak-instrument Cragg-Donald F-statistic thresholds (see Stock and Yogo, 2005). We only report the Kleibergen-Paap LM rank test, which is a generalization of the Cragg-Donald test under heteroskedasticity.

[Insert Table 8]

The dependent variable in the second stage regressions is daily net hedge fund volume as a percentage of shares outstanding. All models include campaign fixed-effects and VIX as controls. In Columns (4)-(6), we also include five lags of daily net hedge fund volume as a percentage of shares outstanding and five lags of the target's daily abnormal return and turnover.

The first stage regressions under both model specifications show that *expected* institutional selling volume (defined as the sum across institutions of the product of each institution's

[15] An earlier version of the instrumental variables analysis included lagged institutional selling and buying as additional instruments. The results were essentially the same as those reported in the current version.

propensity to sell and its average daily selling volume) is significantly positively correlated with *actual* institutional selling volume (Columns (1) and (4)). Recall that each institution's propensity to sell the target stocks is calculated based on its trading in non-target stocks, and hence unrelated to target-specific news or hedge fund trading of target stocks. Our results also show a similar relationship between *expected* institutional buying volume and *actual* institutional buying volume (Columns (2) and (5)). Expected institutional buying (selling) volume has no significant effect on actual institutional selling (buying) volume. These results show that our instruments are significantly related to the endogenous regressors in the expected manner and have full rank.

The second-stage regressions in Columns (3) and (6) show that institutional selling volume has a statistically significant and positive effect on hedge fund purchases. On the other hand, institutional buying volume is not statistically significant in the restricted model in Column (3) but has a significant negative effect on hedge fund purchases in the augmented model in Column (6). Consistent with the naïve regression results in Panel B of Table 5, controlling for lagged target and market characteristics in Column (6) reduces the magnitude of institutional selling volume but increases the significance and magnitude of institutional buying volume. In general, across all specifications, the effects of institutional buying and selling volumes are very similar in magnitude to those reported in Table 5.

In sum, the instrumental variables analysis establishes a causal relationship between institutional selling and the hedge fund's acquisition of target shares. In the next section, we investigate the effect of institutional selling on market conditions and how these conditions allow the activist to accumulate a block of target shares in a relatively short period and with limited price impact.

## 6. Market Mechanism

### *6.1. Institutional trading, abnormal returns, and liquidity: univariate analysis*

To investigate the mechanism that relates institutional sales to hedge fund purchases, we begin with a simple univariate analysis of the target's abnormal returns, turnover, and liquidity. Table 9 reports the results.

[Insert Table 9]

We estimate abnormal returns using the market-adjustment model with the CRSP value-weighted return index as the market portfolio. We use logged returns and calculate cumulative abnormal returns (CARs) as the sum of the abnormal returns in each event period. The

estimation window is from 600 to 240 days before the file date. Abnormal turnover and Amihud ratio are calculated by the mean-adjustment approach. With the exception of CARs, the reported summary statistics are the cross-sectional means of the average daily variables for each campaign.

As reported in Panel A, the average activist target experiences negative CARs of -1.79% in the period from 240 to 60 days before the activist's public filing. These CARs turn positive in the two months before the start of the campaign when hedge funds accumulate the majority of their concentrated positions. For example, the average target's CAR is 4.42% in the 60 days before the filing date, with 3.21% occurring in the 10-day period between the event and the filing dates.

We also find that the average target's daily abnormal returns are significantly higher on days with hedge fund trading than on days with no hedge fund trading (e.g., 0.35% versus 0.06% in the 60 day period before filing). On the other hand, we document significantly lower average daily abnormal returns on days with net institutional selling (compared to days with no institutional selling). Thus, both hedge fund trades and institutional trades affect prices.

Panel B shows that abnormal turnover is higher on days of hedge fund trading and net institutional selling than on other days. Panel C demonstrates that liquidity (measured by Amihud ratio) is consistently higher (i.e., price impact lower) on days of hedge fund trading than on days with no such trading. This suggests that hedge funds may be strategic in their trading, or that their trading may indeed improve liquidity.[16] On the other hand, the univariate association between liquidity and non-hedge fund institutional selling is inconclusive. Intuitively, institutional trading may be liquidity-motivated in some cases, or strategic in others. The strategic interaction between hedge funds and other institutions makes it difficult to identify the impact of institutional trading on market conditions and the effect of these conditions on hedge fund purchases.

### *6.2. Institutional trading, abnormal returns, and liquidity: multivariate analysis*

Our univariate findings show that net institutional selling correlates with negative abnormal returns and positive abnormal turnover. However, these results do not take into account that institutional trading, hedge fund trading, and market conditions are all endogenously determined as both institutions and hedge funds may choose to trade in ways that minimize their price impact or they may demand/supply liquidity.

[16] These results are consistent with the findings of Collin-Dufresne and Fos (2012) who show that standard liquidity measures improve on the days when Schedule 13D filers trade.

To disentangle the effect of institutional trading on the target's returns, turnover, and liquidity and the impact of the resulting market conditions on the hedge fund's acquisition of target shares, we undertake a *two-step* analysis. In the first step, we focus on the period from 240 to 90 days before the file date and use instrumental variables analysis to identify the impact of institutional trading on the target's returns, turnover, and liquidity. In this period, hedge fund trading is light, which allows us to better isolate the impact of institutional trading on the market. In the second step, we focus on explaining hedge fund purchases in the 60 days before the file date. We use the first-step estimates to calculate the market conditions that would have resulted from institutional trading in the absence of hedge fund trading. We then relate these market conditions to hedge fund purchases of the target stocks.

Our results are presented in Table 10. The main explanatory variables in Panel A are the daily institutional selling and buying volumes in the period between t-240 to t-90. Columns (1)-(3) present naïve regressions, in which we estimate the effect of *actual* trading volumes on the target stock's abnormal returns, turnover, and liquidity. We control for VIX to capture market volatility and time-varying returns to liquidity provision, include five lags of the target's abnormal returns, turnover, and liquidity, and cluster standard errors by campaign. Confirming our univariate results, we find that institutional selling (buying) is significantly negatively (positively) correlated with abnormal returns. Both institutional selling and buying increase turnover and improve liquidity. However, the results in Columns (1)-(3) ignore the potentially serious endogeneity between institutional trading and market conditions.

[Insert Table 10]

In Columns (4)-(6), we address this endogeneity concern by instrumental variables analysis, in which institutional selling and buying of target shares are instrumented by institutional selling and buying of non-target stocks based on the model in Columns (1) and (2) of Panel A of Table 7. Our aim is to capture trades that are not strategic or information-driven but rather liquidity-motivated, and hence exogenous. The results confirm the statistically significant negative relationship between institutional selling volume and abnormal returns. The effect of institutional buying volume is still positive but no longer significant.

Neither institutional selling nor institutional buying significantly affects abnormal turnover or liquidity. The coefficients of institutional selling and buying also drop substantially in magnitude. This suggests that institutions most likely endogenously choose to trade on days of high turnover and liquidity. The difference in results between our naïve and instrumental variables regressions demonstrates that the endogeneity between institutional trading and market conditions should be addressed carefully.

In Panel B of Table 10, we focus on the 60 days before the file date when the average hedge fund activist acquires the majority of his concentrated position in the target. In Columns (1)-(3), we regress daily net hedge fund volume (as a percentage of shares outstanding) on the target's *actual* abnormal returns, turnover, and Amihud ratio. We control for VIX, lagged hedge fund trading, and lagged abnormal returns, turnover, and liquidity. The results of the naïve regressions suggest a statistically significant (but small in magnitude) positive correlation between hedge fund purchases and abnormal returns. This finding is counter-intuitive. It is unlikely that high abnormal returns induce the hedge funds to buy; rather, their buying leads to positive abnormal returns. Finally, high turnover and improved liquidity are positively associated with hedge fund trading (both significant at 1%).

In Columns (4)-(6) of Panel B, we use the target's *expected* daily abnormal returns, turnover, and Amihud ratio, conditional on institutional trading, as the independent variables. The expected market characteristics of the target are determined based on the model estimates in Columns (4)-(6) of Panel A. The two-period estimation addresses endogeneity in two ways. First, we estimate the impact of institutional trading on the market in t-240 to t-90 in the absence of the confounding effects of heavy hedge fund trading. Second, we use each institution's trading in non-target stocks as an instrument to identify exogenous institutional trading in the target. To account for the effect of the errors in the first step on the second-step estimates (Murphy and Topel, 1985), we use Monte Carlo simulation since the two steps are estimated on different samples.

Column (4) shows a statistically significant negative relationship between abnormal returns and net hedge fund volume, opposite to what we find in the naïve analysis. In terms of economic magnitude, a 1% drop in abnormal returns results in 0.15% more shares outstanding purchased by the activist hedge fund. This finding implies that the negative abnormal returns generated by institutional selling (Panel A) cause an economically significant increase in hedge fund purchases of target shares (Panel B). In addition, high abnormal turnover leads to an increase in net hedge fund purchases (Column (5)). However, abnormal liquidity is not a significant determinant of hedge fund trading (Column (6)). The insignificance of liquidity may be due to the fact that institutional trading results in negative abnormal returns and positive abnormal turnover, which have opposite effects on Amihud ratio.

The results in Table 10 provide evidence that non-hedge fund institutional trading is associated with two effects, which facilitate the hedge fund's accumulation of a concentrated position. First, institutional selling results in negative price impact helping hedge funds purchase shares at lower prices. Second, institutional trading also increases turnover, which allows hedge funds to hide their trades.

## 7. Activist Targeting and Policy Implications

Our results establish a causal relationship, at the daily frequency, between institutional selling and hedge fund purchases of target shares. Therefore, in the aggregate, heavy selling by institutions, sustained over several days, may have a causal effect on the hedge fund's decision to initiate a campaign. In this section, we formally test this conjecture and provide additional evidence for the governance role of institutional exit by estimating the effect of institutional trading on the probability of being targeted in an activist campaign.

Following the literature on hedge fund activism, we match activist targets in 2000-2007 to other firms based on characteristics suggested to affect the probability of being targeted.[17] Specifically, we match targets to other CRSP/Compustat firms with Ancerno trading data based on size, market-to-book ratio, institutional ownership, and industry (SIC two-digit code). The match is performed as of 240 days before each campaign when net institutional trading turns negative. We pick the five closest matches for each target and include only targets with at least three matches.

Table 11 presents estimation results of the probability of becoming an activist target. The two main explanatory variables are institutional selling and buying volumes in t-240 to t-60 or t-60 to file date. Panel A includes *actual* selling and buying volumes (as a percentage of shares outstanding) while Panel B uses *expected* institutional selling and buying volumes instrumented by each institution's trading in non-target stocks as in Panel A of Table 7. We control for mean return and turnover estimated during the period from 600 to 240 days before the filing date.[18] We also include campaign fixed effects in some specifications.

[Insert Table 11]

The results of the logistic regressions in Column (1) confirm that institutional selling (buying) is positively (negatively) correlated with the probability of becoming a target in a hedge fund activist campaign. Both effects are statistically significant at 1% in the sixty days to the file date and have high economic significance – a one standard deviation increase in institutional selling raises the odds of being targeted by 58% whereas a one standard deviation increase in institutional buying reduces these odds by 28%.

Column (2) shows that both effects are also statistically significant in the period between t-240 to t-60 but have lower economic significance. In this period, a one standard deviation increase in institutional selling (buying) increases (decreases) the odds of being targeted by 22% (22%). Column (3) includes institutional trading in both periods. Both institutional selling and buying in

[17] See Brav, Jiang, and Kim (2009) for a survey of the literature, including the general characteristics of target firms.
[18] Norli, Ostergaard, and Schindele (2010) show that the relationship between poor firm performance and shareholder activism is stronger for firms with liquid stocks.

the 60 days before the campaign retain their statistical and economic significance. A one standard deviation increase in institutional selling raises the odds of being targeted by 63% whereas a one standard deviation increase in institutional buying reduces these odds by 23%. Note also that institutional selling in the earlier period becomes insignificant after including institutional trading in the 60 days to the file date. This finding suggests that activists likely make the decision to target a specific firm in the days close to the public announcement of the intervention. Our conclusions remain robust to the inclusion of campaign fixed effects in Columns (3)-(6).

Panel B reports the second-stage estimates of 2SLS estimation with a dummy for being targeted as the dependent variable and instrumented institutional trading as the independent variables. We construct our instruments, expected institutional buying and selling volumes, over periods t-60 to t and t-240 to t-60, by summing the expected daily volumes calculated as in Table 8 over all trading days in each period. All first stage regressions easily pass the weak-instrument threshold tests and the coefficients on the instruments have the expected signs. Consistent with our earlier results, institutional selling volume has a statistically significant and positive effect on hedge fund purchases. Institutional buying volume is not statistically significant in the 60 days to the filing date (Column (3)) but has a significantly negative effect on hedge fund purchases in t-240 to t-60 (Column (6)).

Our results demonstrate that institutional trading of target stocks in the months leading up to an activist campaign is an important determinant of a hedge fund's decision to acquire target shares and engage in active monitoring. Figure 5 shows that this mechanism is common across most campaigns; that is, the choice and timing of a campaign are driven to a large extent by non-informational institutional exit. The favorable market conditions generated by institutional selling help a hedge fund activist pass on the costs of an intervention to other institutional investors.

Our evidence has public policy implications regarding the recent debate about tightening the ten-day window before a 5% owner must disclose a beneficial position. In 2011, the law firm of Wachtell, Lipton, Rosen & Katz submitted a petition to the SEC arguing that reducing the reporting window will protect investors from an aggressive hedge fund who seeks "to exploit this period of permissible silence to acquire shares at a discount to the market price that may result from its belated disclosures."[19] On the other hand, Bebchuk and Jackson (2011) argue that increased transparency by tightening the disclosure requirements should be balanced against reduced incentives for large shareholders to accumulate concentrated positions and monitor.

[19] The full text of the petition is available at http://www.sec.gov/rules/petitions/2011/petn4-624.pdf.

The results in this paper indicate that institutional investors are typically on the other side of hedge fund purchases. As large market players, institutions are less likely to get harmed by trading with privately informed hedge funds. Even though the selling institutions trade at prices that are not reflective of the impending activist campaign, their trading before and after the event day reveals that a heightened need for liquidity is the main determinant of their disposal of target shares. Consequently, reducing the reporting window for disclosing beneficial ownership is unlikely to affect their decision to sell. We show that these institutions continue to dispose of target shares even after the public announcement of the campaign. Finally, hedge fund purchases increase prices and improve liquidity, allowing distressed institutions to sell target shares at higher prices compared to the price that would have prevailed had there been no campaign in the first place.

On the other hand, tightening the period during which activist shareholders can accumulate target shares without disclosing their intentions will reduce the ability of a monitor to spread the costs of an intervention to other uninformed shareholders. Our back-of-the-envelope calculation shows that an average activist derives approximately 7% of gross returns from his trading in the period between the event and the filing dates.[20] Given the high costs of a campaign documented by Gantchev (2012), this portion of the return may be critical in making an intervention financially feasible. Thus, the benefits of increased transparency seem to be outweighed by its costs in terms of lower incentives for a blockholder to accumulate a large stake in a firm and monitor its operations.

## 8. Conclusion

In this paper, we ask whether the acquisition of a concentrated position by an activist hedge fund and the eventual emergence of a campaign are economically linked to the trading behavior of other institutional investors. At the daily frequency, we find a strong positive relationship between institutional selling and the hedge fund's purchase of target shares. We establish causality by instrumenting an institution's daily trading in the target by its trading in non-target stocks.

Institutional selling lowers prices and increases turnover, which induces larger hedge fund purchases. We find that the ability to rapidly acquire shares with limited price impact is an important determinant of the hedge fund's decision to initiate a campaign. In a sample of firms matched on the characteristics shown in the literature to influence targeting, we demonstrate that

[20] Gross returns are measured as the percentage difference between the average purchase price and the stock price of the target on the filing date. Shares acquired prior to the 60-day reporting period are assumed to be purchased at the average price from t-60 to the event date.

a one standard deviation increase in institutional selling volume raises the odds of becoming an activist target by approximately two-thirds. Our results imply that even non-informational institutional exit plays an important corporate governance role by increasing the probability of activist interventions.

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**Figure 1: Net Trading Volume of Activist Hedge Funds and Other Institutions**

The figure plots the targets' mean daily net trading volume (as a percentage of shares outstanding) of activist hedge funds and other institutions during the 60 days before the public announcement of activism. The mean is calculated across 643 campaigns with available trading data in 2000-2007. *Event date* (day 0) refers to the date on which the hedge fund's ownership crosses the 5% threshold. Hedge fund trading data are collected from SEC filings and non-hedge fund institutional trades come from Ancerno.

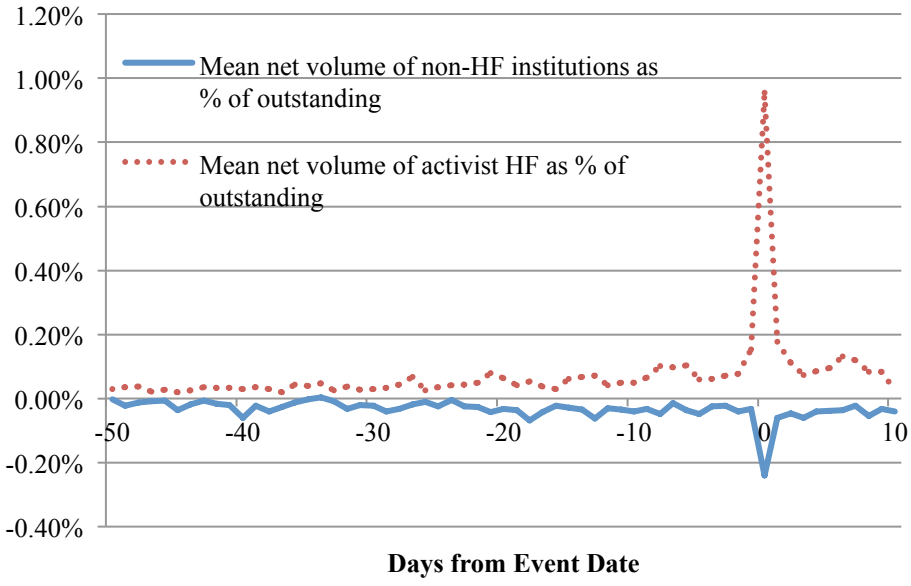



**Figure 2: Cumulative Ownership of Activist Hedge Funds and Other Institutions**

The figure plots the targets' mean cumulative ownership (as a percentage of shares outstanding) of activist hedge funds and other institutions (starting from 0% on day t-360) in the one-year period before the public announcement of activism. *Event date* (day 0) refers to the date on which the hedge fund's ownership crosses the 5% regulatory threshold. The mean is calculated across 643 campaigns with available trading data in 2000-2007. Hedge fund trading data are collected from SEC filings and non-hedge fund institutional trades come from Ancerno.

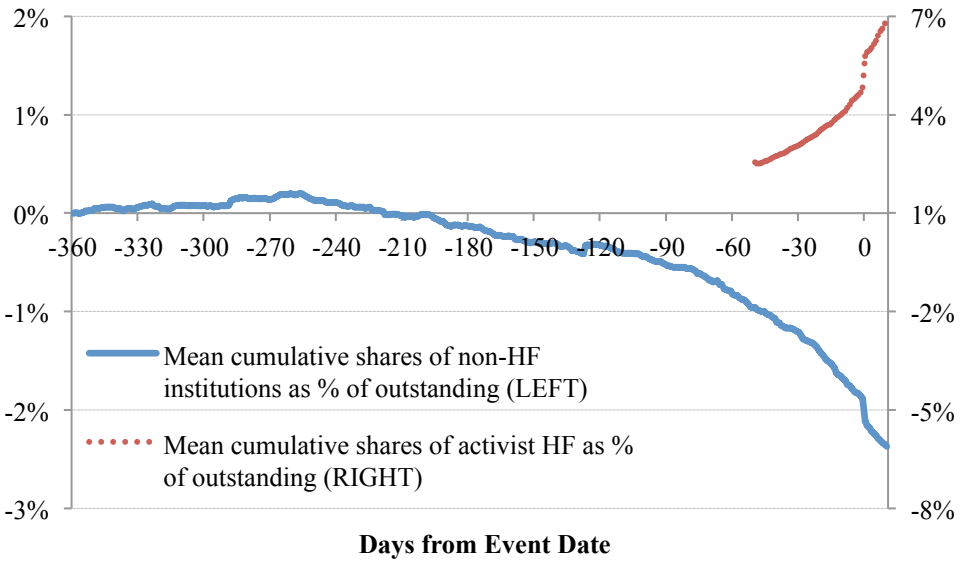


**Figure 3: Institutional Ownership around the Announcement of Activism (Quarterly 13F Data)**

The figure plots changes in the mean and median ownership of hedge funds and other institutions in target stocks over the four quarters surrounding the start of an activist campaign. The sample includes 937 campaigns in 2000-2007, for which hedge fund and institutional quarterly ownership data are available from Thomson Reuters 13F Institutional Database. The reference quarter (*Quarter 0*) contains the date of the public announcement (SEC filing).

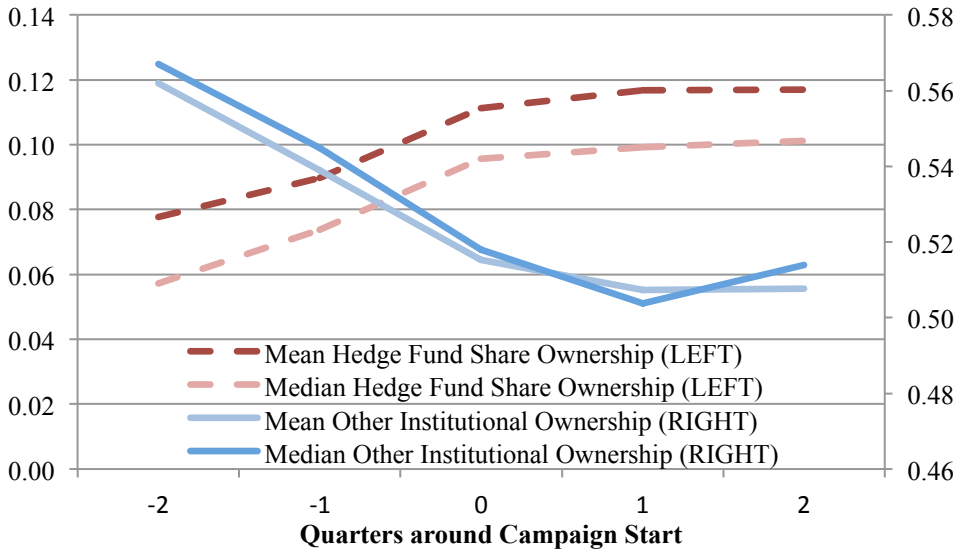



**Figure 4: Cumulative Abnormal Returns and Hedge Fund Trade Price to Price on File Date**

The figure plots the targets' mean cumulative abnormal returns (CARs) and mean ratio of the hedge fund's (trade size-weighted) trade price to the price on the filing date. CARs are calculated by the market-model adjustment approach, in which the CRSP value-weighted index is used as the market portfolio and the loading of each target stock return on the market return is estimated using the period from t-600 to t-240 days before SEC filing. The mean is calculated across 643 campaigns with available trading data in 2000-2007. Hedge fund trading data are collected from SEC filings and non-hedge fund institutional trades come from Ancerno.

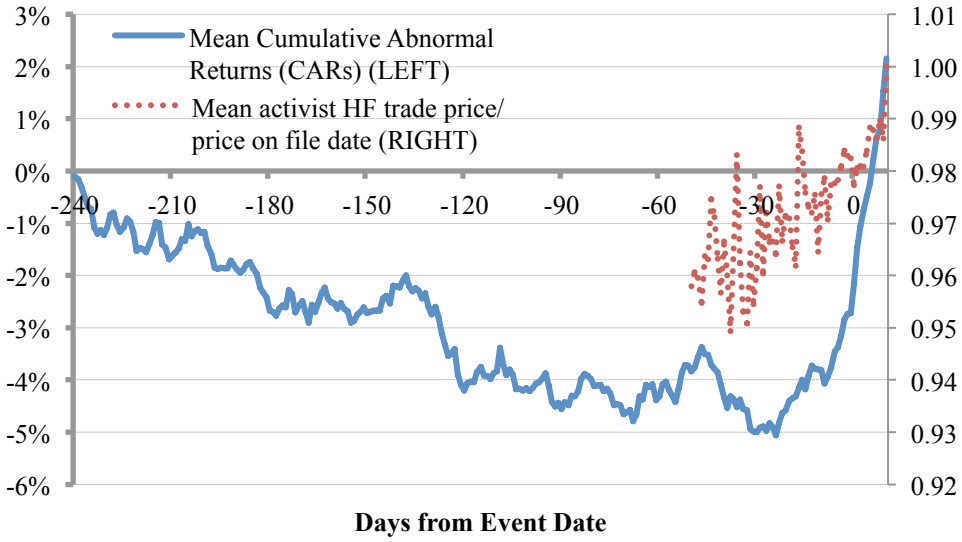


**Figure 5: Net Trading Volume of Activist Hedge Funds and Other Institutions (Sorted by Total Hedge Fund Purchases)**

The figure plots the targets' mean daily net trading volume (as a percentage of shares outstanding) of activist hedge funds and other institutions during the 60 days before the public announcement of activism. The sample period is 2000-2007. The mean is calculated across 643 campaigns sorted into quartiles by the total amount of shares outstanding purchased by the activist hedge fund (Q1 includes the campaigns with the highest amount of hedge fund purchases). *Event date* (day 0) refers to the date on which the hedge fund's ownership crosses the 5% threshold. Hedge fund trading data are collected from SEC filings and non-hedge fund institutional trades come from Ancerno.

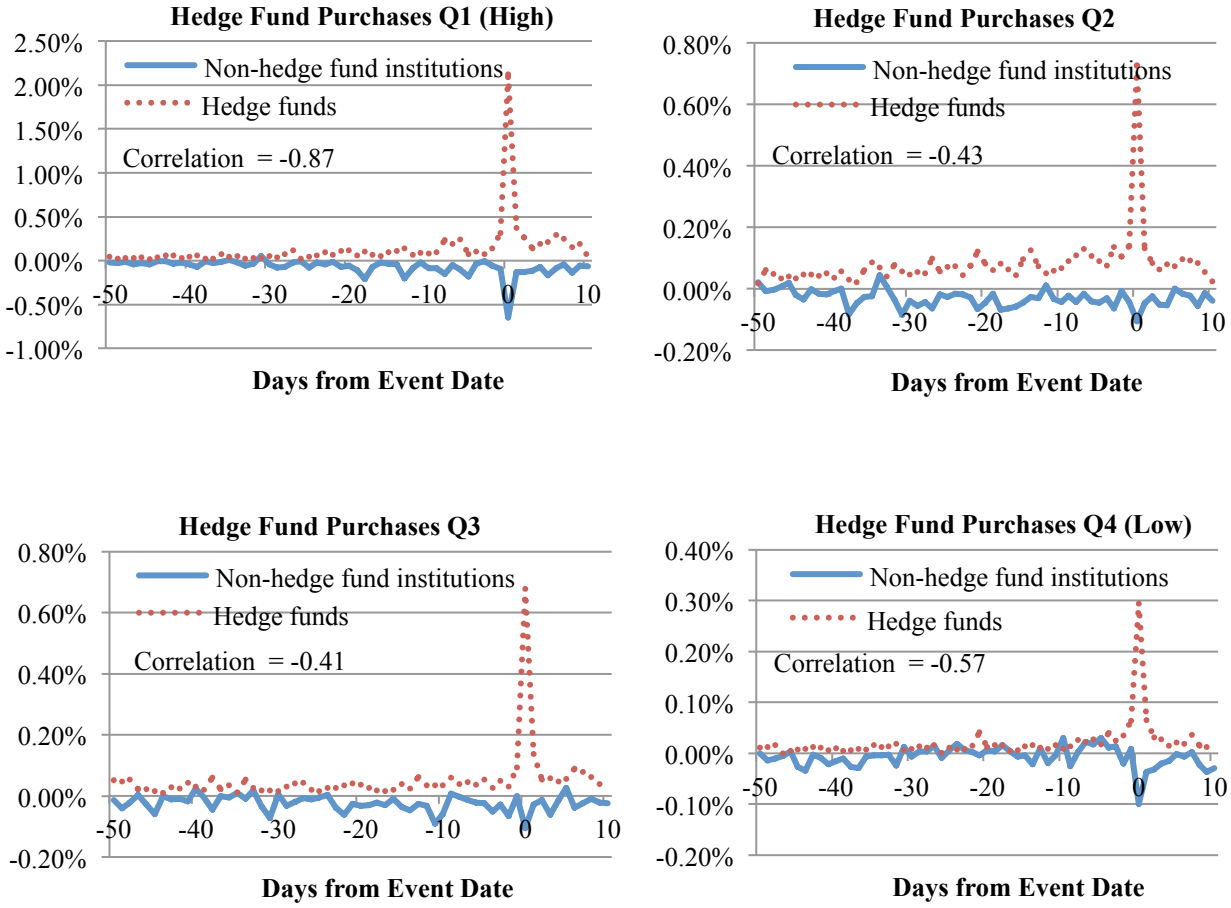
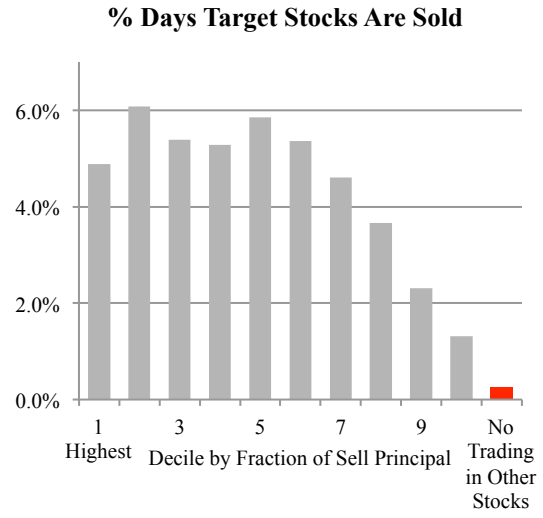
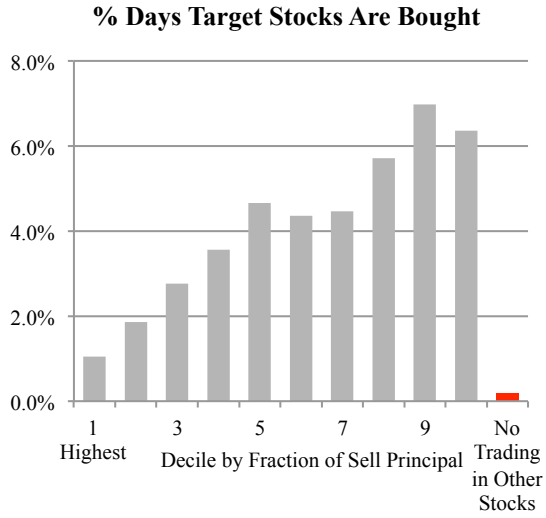
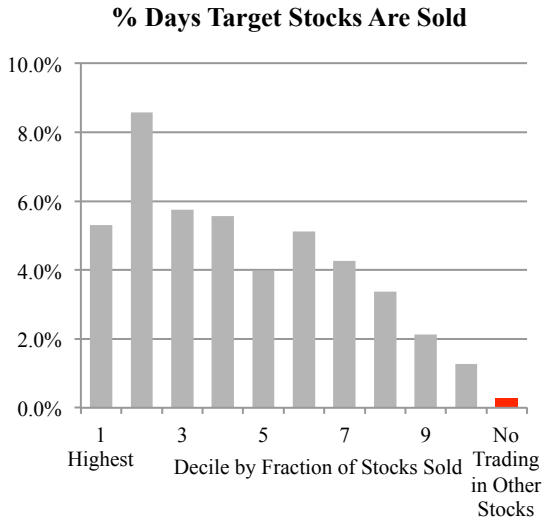


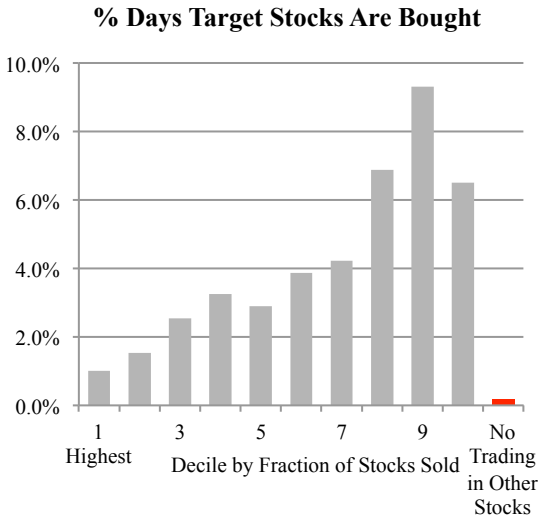
**Figure 6: Institutional Trading in Target and Non-Target Stocks**

These figures plot the percentage of institution-target-days on which the target stocks are sold or bought conditional on the institutions' trading patterns in other non-target stocks. The observations are sorted by the fraction of non-target stocks sold measured in terms of dollar principal (top panel), the fraction of non-target stocks sold measured in terms of number of stocks (middle panel), and the percentage of days in the sample on which each institution trades non-target stocks. The sample includes 643 campaigns in 2000-2007. Non-hedge fund institutional trades come from Ancerno.



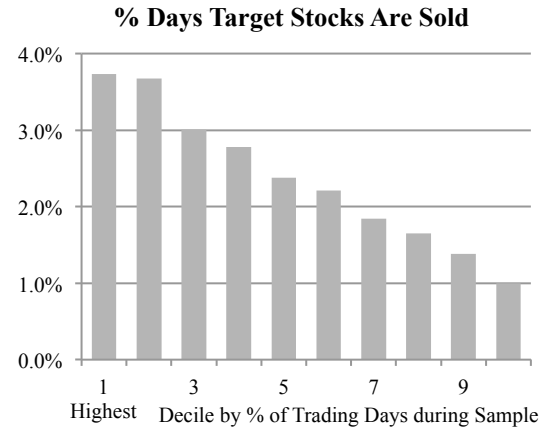




**Table 1: Hedge Fund Trading in Activist Targets**

This table presents summary statistics on activist hedge funds' trading in their targets. The sample includes 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. The upper (lower) panel reports cross-sectional means (medians). The statistics are reported both for the entire 60-day period in which the hedge funds report their trades and for each of the three identifiable sub-periods. For each campaign, day t-60 refers to day -60 from the file date, and event date refers to the date on which the hedge fund's ownership crosses the 5% threshold.

MEAN

| Period | N | Trade as % of Market Volume | Shares Purchased as % of | | Average Price/ Price on File Date | Number of Trades | | % of Shares Purchased in Open Market |
|---|---|---|---|---|---|---|---|---|
| | | | Shares Outstanding | Hedge Fund Ownership on File Date | | Total | Open Market | |
| t-60 to Event Date | 589 | 12.53% | 2.65% | 41.08% | 94.12% | 185 | 185 | 98.79% |
| Event Date | 581 | 41.24% | 1.02% | 13.68% | 97.58% | 14 | 14 | 97.28% |
| Event to File Dates | 452 | 17.63% | 1.28% | 16.93% | 98.61% | 72 | 71 | 98.70% |
| t-60 to File Date | 643 | 15.78% | 4.25% | 61.89% | 98.17% | 232 | 232 | 97.51% |

MEDIAN

| Period | N | Trade as % of Market Volume | Shares Purchased as % of | | Average Price/ Price on File Date | Number of Trades | | % of Shares Purchased in Open Market |
|---|---|---|---|---|---|---|---|---|
| | | | Shares Outstanding | Hedge Fund Ownership on File Date | | Total | Open Market | |
| t-60 to Event Date | 589 | 12.53% | 2.48% | 36.79% | 96.83% | 24 | 23 | 100.00% |
| Event Date | 581 | 41.24% | 0.40% | 6.36% | 97.72% | 2 | 2 | 100.00% |
| Event to File Dates | 452 | 17.63% | 0.73% | 11.49% | 98.20% | 7 | 7 | 100.00% |
| t-60 to File Date | 643 | 15.78% | 3.81% | 61.83% | 97.31% | 30 | 30 | 100.00% |

**Table 2: Institutional Trading in Activist Targets**

This table presents summary statistics on non-hedge fund institutional trading in the targets of activist campaigns. The sample includes 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. The upper (lower) panel reports cross-sectional means (medians). The statistics are reported both for the 60-day period in which the hedge funds report their trades and for the prior 180 days. For each campaign, day t-60 (t-240) refers to day -60 (-240) from the file date, and event date refers to the date on which the hedge fund's ownership crosses the 5% threshold. Institution is a unique combination of client code and client manager code in the Ancerno data.

MEAN

| Period | N | Trade as % of Market Volume | Volume/ Shares Outstanding | | | Number of Institutions | | Number of Trades per Institution | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Buy | Sell | Net | Net Buy | Net Sell | Buy | Sell |
| t-240 to t-60 | 682 | 13.46% | 6.41% | -7.43% | -1.02% | 56 | 70 | 13 | 11 |
| t-60 to Event Date | 625 | 15.14% | 1.93% | -2.93% | -1.00% | 25 | 33 | 9 | 10 |
| Event Date | 447 | 20.35% | 0.12% | -0.46% | -0.34% | 3 | 5 | 3 | 3 |
| Event to File Dates | 518 | 14.53% | 0.92% | -1.28% | -0.36% | 14 | 15 | 5 | 5 |
| t-60 to File Date | 643 | 14.36% | 2.71% | -4.21% | -1.50% | 30 | 40 | 10 | 10 |

MEDIAN

| Period | N | Trade as % of Market Volume | Volume/ Shares Outstanding | | | Number of Institutions | | Number of Trades per Institution | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Buy | Sell | Net | Net Buy | Net Sell | Buy | Sell |
| t-240 to t-60 | 682 | 13.46% | 3.98% | -4.63% | -0.15% | 24 | 27 | 10 | 8 |
| t-60 to Event Date | 625 | 15.14% | 0.90% | -1.56% | -0.19% | 12 | 13 | 6 | 5 |
| Event Date | 447 | 20.35% | 0.01% | -0.05% | -0.02% | 2 | 2 | 1 | 1 |
| Event to File Dates | 518 | 14.53% | 0.11% | -0.22% | -0.03% | 5 | 5 | 3 | 3 |
| t-60 to File Date | 643 | 14.36% | 1.11% | -2.10% | -0.38% | 14 | 15 | 7 | 6 |

**Table 3: Trading in *Target* Stocks by Top Institutional Sellers and Buyers**

This table presents statistics on the top non-hedge fund institutions' combined trading, as a percentage of shares outstanding, in the targets of activist campaigns. The sample includes 643 campaigns in 2000-2007. In Panel A (Panel B), top institutions are the two largest sellers (buyers) in each target stock on the event date. In Panel C (Panel D), top institutions are the five largest sellers (buyers) during the 60-day period in which the hedge funds report their trades. For each campaign, days t-60, t-240, and t+30 refer to days -60, -240, and +30 from the file date, and event date refers to the date on which the hedge fund's ownership crosses the 5% threshold. Institution is a unique combination of client code and client manager code in the Ancerno data.

| Event Window | N | Mean | St. Dev. | 10% | 25% | Median | 75% | 90% |
|---|---|---|---|---|---|---|---|---|
| *Panel A: Top 2 sellers (combined) on the event date* | | | | | | | | |
| t-240 to t-60 | 278 | 0.00% | 1.81% | -0.74% | -0.04% | 0.03% | 0.28% | 1.01% |
| t-60 to Event Date | 309 | -0.44% | 1.31% | -1.55% | -0.43% | -0.05% | 0.00% | 0.11% |
| Event Date | 365 | -0.44% | 1.72% | -0.96% | -0.29% | -0.07% | -0.02% | 0.00% |
| Event to File Dates | 224 | -0.35% | 0.67% | -1.12% | -0.35% | -0.08% | -0.01% | 0.00% |
| t-60 to File Date | 365 | -1.02% | 2.72% | -2.79% | -0.95% | -0.25% | -0.03% | 0.00% |
| File Date to t+30 | 207 | -0.38% | 0.88% | -1.21% | -0.45% | -0.05% | 0.00% | 0.02% |
| *Panel B: Top 2 buyers (combined) on the event date* | | | | | | | | |
| t-240 to t-60 | 242 | 0.26% | 1.19% | -0.08% | 0.00% | 0.05% | 0.20% | 0.68% |
| t-60 to Event Date | 298 | 0.32% | 1.21% | -0.01% | 0.01% | 0.05% | 0.21% | 0.72% |
| Event Date | 343 | 0.13% | 0.33% | 0.00% | 0.00% | 0.02% | 0.10% | 0.32% |
| Event to File Dates | 241 | 0.17% | 0.62% | 0.00% | 0.00% | 0.01% | 0.09% | 0.46% |
| t-60 to File Date | 343 | 0.53% | 1.55% | 0.00% | 0.02% | 0.08% | 0.43% | 1.11% |
| File Date to t+30 | 266 | 0.09% | 0.57% | -0.13% | 0.00% | 0.01% | 0.04% | 0.22% |
| *Panel C: Top 5 sellers (combined) during t-60 to the file date* | | | | | | | | |
| t-240 to t-60 | 536 | 0.26% | 2.30% | -1.62% | -0.35% | 0.06% | 0.81% | 2.32% |
| t-60 to Event Date | 578 | -2.11% | 3.08% | -5.13% | -2.62% | -1.11% | -0.38% | -0.06% |
| Event Date | 237 | -0.69% | 2.48% | -1.72% | -0.44% | -0.13% | -0.04% | -0.01% |
| Event to File Dates | 371 | -0.85% | 1.88% | -2.25% | -0.72% | -0.24% | -0.05% | -0.01% |
| t-60 to File Date | 595 | -2.86% | 4.03% | -6.72% | -3.70% | -1.59% | -0.51% | -0.13% |
| File Date to t+30 | 367 | -0.50% | 1.14% | -1.46% | -0.57% | -0.09% | 0.00% | 0.05% |
| *Panel D: Top 5 buyers (combined) during t-60 to the file date* | | | | | | | | |
| t-240 to t-60 | 489 | 0.72% | 1.63% | -0.32% | 0.01% | 0.23% | 0.96% | 2.64% |
| t-60 to Event Date | 570 | 1.36% | 2.21% | 0.06% | 0.23% | 0.65% | 1.64% | 3.56% |
| Event Date | 235 | 0.16% | 0.41% | 0.00% | 0.00% | 0.03% | 0.15% | 0.38% |
| Event to File Dates | 409 | 0.44% | 1.20% | 0.00% | 0.01% | 0.10% | 0.36% | 1.05% |
| t-60 to File Date | 587 | 1.69% | 2.56% | 0.09% | 0.28% | 0.84% | 2.09% | 4.40% |
| File Date to t+30 | 464 | 0.01% | 0.82% | -0.57% | -0.09% | 0.01% | 0.16% | 0.62% |

**Table 4: Trading in *Non-Target* Stocks by Top Institutional Sellers and Buyers**

This table presents statistics on the top non-hedge fund institutions' trading in stocks other than the targets of activist campaigns. In Panel A (Panel B), top institutions are the two largest sellers (buyers) in each target stock on the event date. In Panel C (Panel D), top institutions are the five largest sellers (buyers) during the 60-day period in which the hedge funds report their trades. For each campaign, days t-60, t-240, and t+30 refer to days -60, -240, and +30, respectively, from the file date, and event date refers to the date on which the hedge fund's ownership crosses the 5% threshold. Institution is a unique combination of client code and client manager code in the Ancerno data.

| Event Window | N | Days Traded in Period | Sell Principal/ Total Principal | # Stocks Sold/ # Stocks Traded | Buy Trade Size ($ Million) | Sell Trade Size ($ Million) | # Days Traded/ Total # Days in Sample |
|---|---|---|---|---|---|---|---|
| *Panel A: Top 2 sellers (combined) on the event date* | | | | | | | |
| t-240 to t-60 | 343 | 84 | 49.54% | 48.47% | 0.418 | 0.492 | 53.39% |
| t-60 to Event Date | 364 | 28 | 49.59% | 49.25% | 0.395 | 0.448 | 52.92% |
| Event Date | 356 | 1 | 56.47% | 58.12% | 0.390 | 0.366 | 54.26% |
| Event to File Dates | 346 | 7 | 51.11% | 50.44% | 0.404 | 0.429 | 54.41% |
| t-60 to File Date | 365 | 35 | 50.41% | 49.98% | 0.393 | 0.436 | 53.27% |
| File Date to t+30 | 350 | 17 | 50.91% | 50.94% | 0.420 | 0.476 | 53.75% |
| *Panel B: Top 2 buyers (combined) on the event date* | | | | | | | |
| t-240 to t-60 | 325 | 87 | 40.83% | 39.68% | 0.342 | 0.719 | 53.38% |
| t-60 to Event Date | 340 | 28 | 39.34% | 37.62% | 0.360 | 0.850 | 53.36% |
| Event Date | 336 | 1 | 31.46% | 28.10% | 0.311 | 0.727 | 53.85% |
| Event to File Dates | 332 | 8 | 38.21% | 35.61% | 0.354 | 0.965 | 53.99% |
| t-60 to File Date | 343 | 36 | 38.77% | 36.85% | 0.340 | 0.858 | 53.25% |
| File Date to t+30 | 337 | 17 | 40.11% | 38.31% | 0.392 | 1.231 | 53.59% |
| *Panel C: Top 5 sellers (combined) during t-60 to the file date* | | | | | | | |
| t-240 to t-60 | 586 | 83 | 49.44% | 48.36% | 0.459 | 0.688 | 52.32% |
| t-60 to Event Date | 592 | 28 | 50.32% | 49.81% | 0.466 | 0.543 | 52.20% |
| Event Date | 572 | 1 | 50.58% | 50.04% | 0.422 | 0.455 | 56.26% |
| Event to File Dates | 565 | 11 | 50.42% | 49.98% | 0.449 | 0.517 | 53.62% |
| t-60 to File Date | 595 | 38 | 50.55% | 50.10% | 0.460 | 0.533 | 52.11% |
| File Date to t+30 | 580 | 17 | 49.62% | 49.22% | 0.493 | 0.561 | 52.95% |
| *Panel D: Top 5 buyers (combined) during t-60 to the file date* | | | | | | | |
| t-240 to t-60 | 578 | 83 | 43.53% | 41.86% | 0.396 | 0.685 | 52.53% |
| t-60 to Event Date | 585 | 28 | 43.11% | 41.18% | 0.446 | 0.896 | 52.17% |
| Event Date | 558 | 1 | 44.22% | 41.89% | 0.415 | 0.625 | 56.21% |
| Event to File Dates | 557 | 9 | 43.20% | 41.42% | 0.451 | 1.102 | 53.83% |
| t-60 to File Date | 587 | 36 | 43.07% | 41.14% | 0.444 | 1.205 | 52.03% |
| File Date to t+30 | 579 | 17 | 44.19% | 42.93% | 0.445 | 1.275 | 52.61% |

**Table 5: Relationship between Hedge Fund Trading and Institutional Trading**

This table reports logistic estimates (Panel A) and OLS estimates (Panel B) of the effect of institutional trading in target stocks on activist hedge fund trading. The sample includes 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. In Panel A, the dependent variable is a dummy that equals one if the activist hedge fund trades on a target-day, and zero otherwise. In Panel B, the dependent variable is the total number of shares purchased by the hedge fund on each target-day, as a percentage of shares outstanding. Standard errors, clustered by campaign, are in parentheses. *, **, and *** refer to statistical significance at 10%, 5%, and 1% levels, respectively.

| *Panel A: Logistic estimation of the probability of hedge fund purchases* | | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Dummy (inst net sell) | 0.494*** | | | | |
| | (0.086) | | | | |
| Dummy (inst net buy) | 0.316*** | | | | |
| | (0.092) | | | | |
| Inst sell volume/SHROUT | | 130.697*** | 130.928*** | 153.490*** | 147.416*** |
| | | (15.924) | (13.020) | (16.402) | (14.532) |
| Inst buy volume/SHROUT | | 2.698 | -3.930 | 1.411 | -2.221 |
| | | (25.558) | (21.705) | (25.555) | (24.476) |
| Dummy (HF trade) l1 | | | 2.010*** | | 1.717*** |
| | | | (0.047) | | (0.047) |
| Dummy (HF trade) l2 | | | 0.750*** | | 0.566*** |
| | | | (0.045) | | (0.044) |
| Dummy (HF trade) l3 | | | 0.449*** | | 0.288*** |
| | | | (0.048) | | (0.047) |
| Dummy (HF trade) l4 | | | 0.245*** | | 0.068 |
| | | | (0.049) | | (0.047) |
| Dummy (HF trade) l5 | | | 0.291*** | | 0.030 |
| | | | (0.048) | | (0.049) |
| Abnormal return l1 | | | -0.671 | | -0.360 |
| | | | (0.495) | | (0.493) |
| Abnormal turnover l1 | | | -0.306 | | 0.876 |
| | | | (0.698) | | (0.732) |
| VIX | -0.006 | -0.009 | -0.004 | 0.053*** | 0.035*** |
| | (0.007) | (0.007) | (0.003) | (0.016) | (0.011) |
| Market condition controls | NONE | NONE | Lags 2 to 5 of AR and AT | NONE | Lags 2 to 5 of AR and AT |
| Campaign-level controls | CAR (t-240 to t-60), CAT (t-240 to t-60), CAA (t-240 to t-60) | | | Campaign dummies | |
| N | 27,684 | 27,684 | 27,610 | 30,602 | 27,568 |
| Pseudo R-squared (within) | 0.009 | 0.007 | 0.306 | 0.010 | 0.191 |

**Table 5, cont'd: Relationship between Hedge Fund Trading and Institutional Trading**

| *Panel B: OLS estimation of daily net hedge fund volume as a percentage of shares outstanding* | | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Dummy (inst net sell) | 0.0005*** | | | | |
| | (0.0001) | | | | |
| Dummy (inst net buy) | 0.0001 | | | | |
| | (0.0001) | | | | |
| Inst sell volume/SHROUT | | 0.339*** | 0.321*** | 0.348*** | 0.369*** |
| | | (0.034) | (0.036) | (0.036) | (0.042) |
| Inst buy volume/SHROUT | | 0.003 | -0.005 | 0.034 | 0.031 |
| | | (0.028) | (0.028) | (0.027) | (0.032) |
| Net HF volume/SHROUT l1 | | | 0.132*** | | 0.111*** |
| | | | (0.024) | | (0.024) |
| Net HF volume/SHROUT l2 | | | 0.056*** | | 0.037*** |
| | | | (0.014) | | (0.014) |
| Net HF volume/SHROUT l3 | | | 0.012* | | -0.005 |
| | | | (0.007) | | (0.007) |
| Net HF volume/SHROUT l4 | | | 0.037*** | | 0.020* |
| | | | (0.011) | | (0.011) |
| Net HF volume/SHROUT l5 | | | 0.024** | | 0.006 |
| | | | (0.011) | | (0.012) |
| Abnormal return l1 | | | 0.000 | | 0.000 |
| | | | (0.001) | | (0.001) |
| Abnormal turnover l1 | | | 0.001 | | 0.002 |
| | | | (0.002) | | (0.002) |
| VIX | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Market condition controls | NONE | NONE | Lags 2 to 5 of AR and AT | NONE | Lags 2 to 5 of AR and AT |
| Campaign-level controls | CAR (t-240 to t-60), CAT (t-240 to t-60), CAA (t-240 to t-60) | | | Campaign dummies | |
| N | 27,684 | 27,684 | 27,610 | 30,602 | 27,568 |
| R-squared (within) | 0.004 | 0.017 | 0.049 | 0.016 | 0.037 |

**Table 6: Persistence of Hedge Fund and Institutional Trading**

This table reports coefficient estimates of regressions of activist hedge fund trading and institutional trading on their lags. The sample includes 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. All regressions also include VIX and campaign fixed effects. Standard errors, clustered by campaign, are omitted for brevity. *, **, and *** refer to statistical significance at 10%, 5%, and 1% levels, respectively.

| | Dependent Variable | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Dummy (HF trade) | HF volume/ SHROUT | Inst sell volume/ SHROUT | Inst buy volume/ SHROUT |
| Dummy (HF trade) l1 | 1.759*** | | | |
| Dummy (HF trade) l2 | 0.568*** | | | |
| Dummy (HF trade) l3 | 0.293*** | | | |
| Dummy (HF trade) l4 | 0.103** | | | |
| Dummy (HF trade) l5 | 0.044 | | | |
| HF volume/SHROUT l1 | | 0.121*** | 0.007** | 0.001 |
| HF volume/SHROUT l2 | | 0.042*** | 0.001 | 0.000 |
| HF volume/SHROUT l3 | | 0.002 | 0.003 | 0.002 |
| HF volume/SHROUT l4 | | 0.026** | 0.003 | 0.002 |
| HF volume/SHROUT l5 | | 0.005 | 0.003 | -0.001 |
| Inst sell volume/SHROUT l1 | 3.926 | 0.007 | 0.051*** | -0.007** |
| Inst sell volume/SHROUT l2 | 4.306 | 0.005 | 0.016*** | -0.001 |
| Inst sell volume/SHROUT l3 | -1.734 | 0.002 | 0.006** | -0.000 |
| Inst sell volume/SHROUT l4 | 7.593 | 0.006 | 0.002 | -0.002 |
| Inst sell volume/SHROUT l5 | 7.150 | 0.012 | 0.009*** | 0.002 |
| Inst buy volume/SHROUT l1 | -7.695 | -0.011 | -0.020 | 0.048** |
| Inst buy volume/SHROUT l2 | -0.144 | -0.014** | -0.010** | 0.016** |
| Inst buy volume/SHROUT l3 | 4.108 | -0.004 | 0.001 | 0.009 |
| Inst buy volume/SHROUT l4 | 10.150* | 0.000 | -0.004 | 0.016** |
| Inst buy volume/SHROUT l5 | -1.131 | -0.001 | -0.009*** | 0.004 |
| Model | LOGIT | OLS | OLS | OLS |
| N | 30,580 | 27,502 | 27,502 | 27,502 |
| Pseudo R-squared/ R-squared | 0.192 | 0.022 | 0.031 | 0.025 |

**Table 7: Relationship between Individual Institution's Trading in Target and Non-Target Stocks**

This table reports multinomial logistic estimates (Panel A) and OLS estimates (Panel B) of the probability that each institution will buy, sell, or not trade the target stocks conditional on its trading in other non-target stocks. The sample includes 6,035 institutions that trade in 643 activist campaigns over the period from 2000 to 2007. For each campaign, institutions are included only if they trade at least twice during the 60-day period in which the hedge funds report their trades. Each observation is stock-institution-day. In Panel A, the odds of buy and sell are estimated relative to no trading (reference outcome). Campaign characteristics are controlled for using the target's prior six-month cumulative abnormal return (CAR), cumulative abnormal turnover (CAT), and cumulative abnormal Amihud ratio (CAA). In Panel B, the probabilities of buy and sell are estimated separately. Campaign characteristics are controlled for using campaign fixed-effects. Standard errors, clustered by campaign, are in parentheses. *, **, and *** refer to statistical significance at 10%, 5%, and 1% levels, respectively.

*Panel A: Multinomial logistic estimation of an individual institution's buy/sell in target stocks*

| | Sell Fraction = Fraction of Sell Principal | | Sell Fraction = Fraction of Stocks Sold | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Buy | Sell | Buy | Sell |
| Dummy (trade other stocks) | 4.194*** | 2.331*** | 4.466*** | 1.856*** |
| | (0.030) | (0.028) | (0.030) | (0.029) |
| Dummy (trade other stocks) | -1.790** | 1.119*** | -2.810** | 1.909*** |
| * Sell fraction | (0.019) | (0.017) | (0.022) | (0.020) |
| Dummy (trade only one other stock) | -1.764** | -1.352** | -1.939** | -1.488** |
| | (0.027) | (0.024) | (0.027) | (0.025) |
| Dummy (sell target) l1 | 0.224*** | 2.956*** | 0.164*** | 3.017*** |
| | (0.026) | (0.011) | (0.027) | (0.012) |
| Dummy (buy target) l1 | 2.637*** | 0.253*** | 2.654*** | 0.165*** |
| | (0.012) | (0.026) | (0.013) | (0.026) |
| Dummy (trade other stocks) l1 | -1.065** | -0.512** | -1.202** | -0.259** |
| | (0.018) | (0.020) | (0.019) | (0.020) |
| Dummy (trade other stocks) l1 | 0.187*** | -0.376** | 0.653*** | -0.801** |
| * Sell fraction l1 | (0.019) | (0.018) | (0.020) | (0.020) |
| Fraction of trading days during sample | -0.310** | -0.401** | -0.285** | -0.340** |
| | (0.037) | (0.035) | (0.037) | (0.036) |
| CRSP value-weighted return | 3.381*** | 0.024 | 2.691*** | 0.326 |
| | (0.600) | (0.586) | (0.605) | (0.591) |
| VIX | -0.018** | -0.016** | -0.016** | -0.016** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Campaign-level controls | CAR (t-240 to t-60), CAT (t - 240 to t-60), CAA (t-240 to t-60) in all models | | | |
| N | 945,861 | | 945,861 | |
| Pseudo R-squared | 0.249 | | 0.268 | |

**Table 7, cont'd: Relationship between Individual Institution's Trading in Target and Non-Target Stocks**

*Panel B: OLS estimation of an individual institution's buy/sell in target stocks*

| | Sell Fraction = Fraction of Sell Principal | | Sell Fraction = Fraction of Stocks Sold | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Buy | Sell | Buy | Sell |
| Dummy (trade other stocks) | 0.143*** | 0.046*** | 0.164*** | 0.027*** |
| | (0.009) | (0.004) | (0.010) | (0.003) |
| Dummy (trade other stocks) | -0.101** | 0.070*** | -0.148** | 0.113*** |
| * Sell fraction | (0.006) | (0.005) | (0.009) | (0.007) |
| Dummy (trade only one other stock) | -0.063** | -0.051** | -0.062** | -0.052** |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Dummy (sell target) l1 | -0.011** | 0.368*** | -0.011** | 0.369*** |
| | (0.002) | (0.012) | (0.002) | (0.012) |
| Dummy (buy target) l1 | 0.314*** | -0.006** | 0.312*** | -0.006** |
| | (0.009) | (0.002) | (0.010) | (0.002) |
| Dummy (trade other stocks) l1 | -0.051** | -0.022** | -0.060** | -0.012** |
| | (0.004) | (0.002) | (0.005) | (0.002) |
| Dummy (trade other stocks) l1 | 0.011*** | -0.023** | 0.030*** | -0.045** |
| * Sell fraction l1 | (0.002) | (0.003) | (0.003) | (0.003) |
| Fraction of trading days during sample | -0.003 | -0.013** | -0.004 | -0.013** |
| | (0.003) | (0.003) | (0.003) | (0.003) |
| CRSP value-weighted return | 0.171*** | 0.044 | 0.147*** | 0.053 |
| | (0.053) | (0.066) | (0.051) | (0.065) |
| VIX | 0.000 | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Campaign-level controls | Campaign dummies in all models | | | |
| N | 945,861 | 945,861 | 945,861 | 945,861 |
| R-squared | 0.162 | 0.197 | 0.173 | 0.204 |

**Table 8: Instrumenting Daily Trading in Activist Targets by Individual Institution's Daily Trading in Other *Non-Target* Stocks**

This table reports 2SLS estimates of the effect of institutional trading in target stocks on activist hedge fund trading. The sample includes 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. Columns (1)-(2) and (4)-(5) report the first stage estimation, in which institutional selling and buying volumes in a target are projected on two instruments constructed based on the model in Columns (1)-(2) of Panel A of Table 7. The instruments are the aggregates of *individual* institutions' expected trading in the target stock conditional on their trading in *non-target* stocks. Columns (3) and (6) report the second-stage estimation with *instrumented* institutional selling and buying volumes as the main independent variables. The dependent variable is the number of shares purchased by the hedge fund on each target-day, as a percentage of shares outstanding. Standard errors, clustered by campaign, are in parentheses. All regressions included campaign fixed effects. *, **, and *** refer to statistical significance at 10%, 5%, and 1% levels, respectively.

| Variables | Inst sell volume /SHROUT *(1st stage)* | Inst buy volume /SHROUT *(1st stage)* | Net HF volume /SHROUT *(2nd stage)* | Inst sell volume /SHROUT *(1st stage)* | Inst buy volume /SHROUT *(1st stage)* | Net HF volume /SHROUT *(2nd stage)* |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Inst sell volume/SHROUT | | | 0.399*** | | | 0.175** |
| | | | (0.082) | | | (0.085) |
| Inst buy volume/SHROUT | | | -0.031 | | | -0.223** |
| | | | (0.087) | | | (0.088) |
| Exp (inst sell volume)/SHROUT | 0.342*** | 0.012 | | 0.315*** | 0.000 | |
| | (0.044) | (0.014) | | (0.044) | (0.014) | |
| Exp (inst buy volume)/SHROUT | 0.024 | 0.270*** | | 0.001 | 0.248*** | |
| | (0.023) | (0.073) | | (0.022) | (0.095) | |
| Net HF volume/SHROUT l1 | | | | 0.005 | -0.003* | 0.112*** |
| | | | | (0.003) | (0.002) | (0.025) |
| Net HF volume/SHROUT l2 | | | | 0.002 | -0.002 | 0.037*** |
| | | | | (0.002) | (0.002) | (0.014) |
| Net HF volume/SHROUT l3 | | | | 0.003 | 0.001 | -0.004 |
| | | | | (0.003) | (0.001) | (0.007) |
| Net HF volume/SHROUT l4 | | | | 0.004 | 0.004 | 0.022** |
| | | | | (0.003) | (0.002) | (0.011) |
| Net HF volume/SHROUT l5 | | | | 0.001 | -0.000 | 0.006 |
| | | | | (0.003) | (0.002) | (0.012) |
| Abnormal return l1 | | | | -0.001* | -0.000 | -0.000 |
| | | | | (0.000) | (0.000) | (0.001) |
| Abnormal turnover l1 | | | | 0.004*** | 0.002*** | 0.003 |
| | | | | (0.001) | (0.001) | (0.002) |
| VIX | -0.000 | -0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Market condition controls | NONE | | | Lags 2 to 5 of AR and AT | | |
| Campaign-level controls | Campaign dummies | | | Campaign dummies | | |
| Kleibergen-Paap Rank LM | $\chi^2(1) = 65.33$*** | | | $\chi^2(1) = 62.14$*** | | |
| N | 30,676 | 30,676 | 30,676 | 24,575 | 24,575 | 24,575 |
| R-squared (within) | 0.038 | 0.022 | 0.016 | 0.052 | 0.028 | 0.029 |

**Table 9: Abnormal Returns and Liquidity of Target Stocks**

This table presents summary statistics on the abnormal returns, abnormal turnover, and abnormal Amihud ratio of stocks targeted in activist campaigns. The sample includes 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. Abnormal returns are calculated by the market-model adjustment approach, in which the CRSP value-weighted index is used as the market portfolio. Abnormal turnover and Amihud ratio are calculated by the mean-adjustment approach. The estimation period is from t-600 to t-240 days before the public announcement of activism (t=0 is the file date). Means are calculated first across all days in the period for each stock and then across all stocks. For each campaign, day t-60 (t-240) refers to day -60 (-240) from the file date, and event date refers to the date on which the hedge fund's ownership crosses the 5% threshold.

*Panel A: Abnormal Returns*

| | | CARs | Hedge Funds | | Institutions | |
|---|---|---|---|---|---|---|
| Period | N | All Days | Trade | No Trade | Net Sell | Others |
| t-240 to t-60 | 740 | -1.79% | | | -0.14% | 0.06% |
| t-60 to Event Date | 640 | 0.81% | 0.15% | 0.01% | -0.04% | 0.11% |
| Event Date | 630 | 0.56% | 0.56% | | 0.30% | 0.77% |
| Event to File Dates | 613 | 3.21% | 0.56% | 0.61% | 0.42% | 0.58% |
| t-60 to File Date | 643 | 4.42% | 0.35% | 0.06% | 0.07% | 0.20% |

*Panel B: Abnormal Turnover*

| | | | Hedge Funds | | Institutions | |
|---|---|---|---|---|---|---|
| Period | N | All Days | Trade | No Trade | Net Sell | Others |
| t-240 to t-60 | 740 | 0.001 | | | 0.003 | 0.000 |
| t-60 to Event Date | 640 | 0.002 | 0.009 | 0.001 | 0.006 | 0.001 |
| Event Date | 630 | 0.021 | 0.021 | | 0.030 | 0.014 |
| Event to File Dates | 613 | 0.005 | 0.007 | 0.005 | 0.008 | 0.003 |
| t-60 to File Date | 643 | 0.003 | 0.011 | 0.001 | 0.007 | 0.002 |

*Panel C: Abnormal Amihud Ratio*

| | | | Hedge Funds | | Institutions | |
|---|---|---|---|---|---|---|
| Period | N | All Days | Trade | No Trade | Net Sell | Others |
| t-240 to t-60 | 740 | -0.001 | | | -0.006 | 0.000 |
| t-60 to Event Date | 640 | -0.004 | -0.020 | 0.002 | -0.012 | -0.002 |
| Event Date | 630 | -0.030 | -0.030 | | -0.024 | -0.035 |
| Event to File Dates | 613 | -0.013 | -0.021 | -0.009 | -0.014 | -0.012 |
| t-60 to File Date | 643 | -0.006 | -0.023 | 0.000 | -0.014 | -0.004 |

**Table 10: Effect of Institutional Trading on Returns, Turnover, Liquidity, and Hedge Fund Trading**

This table presents a two-step analysis of the effect of institutional trading on the target stock's returns, turnover, and liquidity during t-240 to t-90 days before the file date (Panel A) and the effect of expected returns, turnover, and liquidity on hedge fund trading during t-60 to t (Panel B). The sample includes 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. Columns (1)-(3) of Panel A report OLS regressions with actual daily institutional selling and buying volumes as the main independent variables. Columns (4)-(6) report the second stage of 2SLS estimation, in which the institutional selling and buying volumes are instrumented by the expected institutional volumes obtained from the model in Columns (1)-(2) of Panel A of Table 7. Columns (1)-(3) of Panel B report OLS regressions with net hedge fund trading volume as the dependent variable and the target's *actual* abnormal returns, turnover, and Amihud ratio as the main independent variables. Columns (4)-(6) report OLS regressions with the target's *expected* abnormal returns, turnover, and Amihud ratio as the independent variables. The expected abnormal returns, turnover, and Amihud ratio are estimated based on the institutional selling and buying volumes on each target-day during t-60 to t and the coefficient estimates from the period t-240 to t-90 as reported in Columns (4)-(6) of Panel A. Abnormal returns are calculated by the market-model adjustment approach, in which the CRSP value-weighted index is used as the market portfolio. Abnormal turnover and Amihud ratio are calculated by the mean-adjustment approach. The estimation period is from t-600 to t-240 days before the file date. All models include campaign fixed effects. Standard errors, clustered by campaign, are in parentheses. The standard errors reported in Columns (4)-(6) of Panel B are obtained by Monte Carlo simulation to account for the effects of the errors in the first stage (Murphy and Topel, 1985). *, **, and *** refer to statistical significance at 10%, 5%, and 1% levels, respectively.

*Panel A: Effect of institutional trading on target returns, turnover, and liquidity (**t-240 to t-90**)*

| | Naïve regressions | | | Instrumental variables analysis | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Variables | Abnormal return | Abnormal turnover | Abnormal Amihud | Abnormal return | Abnormal turnover | Abnormal Amihud |
| Inst sell volume/SHROUT | -1.560*** | 1.257*** | -2.020*** | -1.573*** | 0.143 | 0.030 |
| | (0.147) | (0.041) | (0.221) | (0.548) | (0.169) | (0.653) |
| Inst buy volume/SHROUT | 1.463*** | 1.193*** | -2.110*** | 0.866 | 0.102 | -0.714 |
| | (0.151) | (0.043) | (0.229) | (0.761) | (0.166) | (0.593) |
| VIX | -0.000*** | 0.000*** | 0.001*** | -0.000*** | 0.000*** | 0.001*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| 5 lags of abnormal returns | Yes | Yes | Yes | Yes | Yes | Yes |
| 5 lags of abnormal turnover | Yes | Yes | Yes | Yes | Yes | Yes |
| 5 lags of abnormal liquidity | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 69,469 | 69,469 | 69,469 | 69,469 | 69,469 | 69,469 |
| R-squared | 0.011 | 0.278 | 0.049 | 0.011 | 0.217 | 0.048 |

**Table 10 cont'd: Effect of Institutional Trading on Returns, Turnover, Liquidity, and Hedge Fund Trading**

*Panel B: Effect of target returns, turnover, and liquidity on hedge fund trading (**t-60 to t**)*

| | Naïve regressions | | | Two-step analysis | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Net HF volume/ | Net HF volume/ | Net HF volume/ | Net HF volume/ | Net HF volume/ | Net HF volume/ |
| Variables | SHROUT | SHROUT | SHROUT | SHROUT | SHROUT | SHROUT |
| Abnormal return | 0.002** | | | -0.149*** | | |
| | (0.001) | | | (0.043) | | |
| Abnormal turnover | | 0.149*** | | | 0.850*** | |
| | | (0.009) | | | (0.260) | |
| Abnormal Amihud | | | -0.005*** | | | -0.027 |
| | | | (0.000) | | | (0.029) |
| VIX | 0.000*** | 0.000 | 0.000*** | -0.000 | 0.000 | 0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| 5 lags of hedge fund trading | Yes | Yes | Yes | Yes | Yes | Yes |
| 5 lags of abnormal returns | Yes | Yes | No | Yes | Yes | No |
| 5 lags of abnormal turnover | Yes | Yes | No | Yes | Yes | No |
| 5 lags of abnormal liquidity | No | No | Yes | No | No | Yes |
| Observations | 24,069 | 24,069 | 22,758 | 22,889 | 22,889 | 22,889 |
| R-squared | 0.035 | 0.136 | 0.046 | 0.048 | 0.044 | 0.037 |

**Table 11: Probability of Becoming an Activist Target (Matched Sample Analysis)**

This table presents estimation results of the probability of becoming a target in a hedge fund activist campaign. The sample starts with 643 campaigns, over the period from 2000 to 2007, for which both hedge fund trading data and Ancerno institutional trading data are available. Each target is matched to other firms with Ancerno trading data based on common target characteristics – size, market-to-book ratio, institutional ownership, and industry (SIC 2-digit code). The match is performed as of t-240 days before the filing date of each campaign. The best five matches are used and only the targets with at least three matches are included. The final sample includes 350 campaigns. Panel A reports estimates of (conditional) logistic regressions. The dependent variable equals one if a firm is targeted in an activist campaign. Columns (4)-(6) include campaign fixed effects while columns (1)-(3) do not. Panel B presents instrumental variables (OLS) regressions. Columns (1)-(2) and (4)-(5) report the first stage of 2SLS estimation, in which institutional selling and buying volumes in a target are projected on two instruments constructed based on the model in Columns (1)-(2) of Panel A of Table 7. The instruments are the aggregates of *individual* institutions' expected trading in the target stock conditional on their trading in *non-target* stocks. Columns (3) and (6) report the second-stage estimation with *instrumented* institutional selling and buying volumes as the main independent variables and a dummy equal to one if a firm is targeted as the dependent variable. Mean return and turnover are estimated during the period from t-600 to t-240 days before the filing date. Standard errors, clustered by campaign, are in parentheses. *, **, and *** refer to statistical significance at 10%, 5%, and 1% levels, respectively.

*Panel A: Logistic estimation of probability of becoming an activist target*

| Variables | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *(t-60 to File Date)* | | | | | | |
| Inst sell volume/SHROUT | 11.397*** | | 12.169*** | 14.043*** | | 14.772*** |
| | (2.670) | | (3.074) | (2.706) | | (2.860) |
| Inst buy volume/SHROUT | -9.930*** | | -8.039** | -8.344*** | | -6.347** |
| | (3.254) | | (3.348) | (3.133) | | (3.164) |
| *(t-240 to t-60)* | | | | | | |
| Inst sell volume/SHROUT | | 2.653** | 1.727 | | 2.824** | 1.996 |
| | | (1.178) | (1.247) | | (1.291) | (1.322) |
| Inst buy volume/SHROUT | | -3.395*** | -4.313*** | | -3.169** | -4.649*** |
| | | (1.293) | (1.502) | | (1.438) | (1.599) |
| Mean return (t-600 to t-240) | -15.981 | -19.166 | -6.341 | -15.495 | -29.615 | -13.184 |
| | (22.264) | (20.797) | (22.518) | (35.761) | (31.345) | (36.649) |
| Mean turnover (t-600 to t-240) | 5.656 | 13.395 | 13.273 | 10.035 | 15.163 | 13.280 |
| | (7.892) | (8.324) | (8.239) | (8.941) | (9.646) | (9.334) |
| Campaign fixed effects | No | No | No | Yes | Yes | Yes |
| Observations | 1,999 | 1,999 | 1,999 | 1,999 | 1,999 | 1,999 |
| Pseudo R-squared | 0.024 | 0.006 | 0.029 | 0.044 | 0.009 | 0.052 |

**Table 11 cont'd: Probability of Becoming an Activist Target (Matched Sample Analysis)**

*Panel B: Instrumental variables (OLS) estimation of probability of becoming an activist target*

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Variables | Inst sell volume /SHROUT *(1st stage)* | Inst buy volume /SHROUT *(1st stage)* | Dummy for HF target *(2nd stage)* | Inst sell volume /SHROUT *(1st stage)* | Inst buy volume /SHROUT *(1st stage)* | Dummy for HF target *(2nd stage)* |
| *(t-60 to File Date)* | | | | | | |
| Inst sell volume/SHROUT | | | 2.720*** | | | |
| | | | (0.449) | | | |
| Inst buy volume/SHROUT | | | -0.271 | | | |
| | | | (0.635) | | | |
| Exp (Inst sell volume/SHROUT) | 2.178*** | -0.140 | | | | |
| | -0.18 | (0.107) | | | | |
| Exp (Inst buy volume/SHROUT) | -0.069 | 2.158*** | | | | |
| | -0.155 | (0.175) | | | | |
| *(t-240 to t-60)* | | | | | | |
| Inst sell volume/SHROUT | | | | | | 0.388* |
| | | | | | | -0.213 |
| Inst buy volume/SHROUT | | | | | | -0.650*** |
| | | | | | | -0.211 |
| Exp (Inst sell volume/SHROUT) | | | | 1.758*** | -0.157 | |
| | | | | -0.055 | (0.102) | |
| Exp (Inst buy volume/SHROUT) | | | | -0.166*** | 1.601*** | |
| | | | | -0.053 | (0.143) | |
| Mean return (t-600 to t-240) | -0.592 | 0.821*** | -5.235 | -0.051 | 0.850* | -2.108 |
| | (0.439) | (0.211) | (3.428) | (0.254) | (0.459) | (3.203) |
| Mean turnover (t-600 to t-240) | -0.077 | 0.374*** | -2.126 | 0.671*** | 0.618*** | 2.895** |
| | (0.109) | (0.090) | (1.323) | (0.161) | (0.168) | (1.342) |
| Observations | 1,999 | 1,999 | 1,999 | 1,999 | 1,999 | 1,999 |
| R-squared | 0.723 | 0.623 | 0.001 | 0.888 | 0.865 | 0.004 |