Betting on My Enemy: Insider Trading Ahead of Hedge Fund 13D Filings

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Abstract

Corporate insiders often become aware of hedge fund attention prior to a 13D filing. We find abnormal buying activity by insiders in the months leading up to hedge fund 13D filings. Whereas 13D announcement abnormal returns are 7.72%, profits to insiders who buy average 12.09%. Insider buying is not linked to common firm characteristics that predict activist targeting. Our findings indicate that insiders are benefiting from private knowledge that their firm has become the focus of hedge fund activism, and sometimes this knowledge comes directly from the activist. However, insiders largely refrain from trading when there is formal communication with the activist. Profits to insiders who buy when there are no talks prior to the 13D filing are 14.49%, triple the amount for insiders who have had early talks with the hedge fund. Insider trading is linked to indicators of poor corporate culture, but not related to outcomes of activism campaigns.

I. Introduction

Hedge fund activism is a strategy of buying a toehold stake in a target firm and then approaching management with a plan for making changes to the target aimed at increasing shareholder value. Under the Securities Act of 1934 whenever a party acquires more than 5% of the outstanding shares of a firm for anything other than completely passive investment purposes, a 13D filing to the SEC is mandated within 10 days. This is often the first time the public becomes aware that an activist has taken a substantive interest in targeting the firm. However, the 13D filing is not necessarily the first notice that the firm's managers have had that their company has come into the crosshairs of the activist hedge fund. Activists may approach managers privately with their suggestions for operational improvements after acquiring a toehold of stock, but before accumulating stakes exceeding 5% of the outstanding shares. Indeed, Aiken and Lee (2020) study activist strategy and report that one quarter of 13D filers in their sample first engage in early communication with management. Approaching a firm's management or Board of Directors directly for discussion of their proposal for value maximization rather than first announcing their proposal publicly is less confrontational. This gives the activist a voice in the firm to try to persuade management (Levit, 2019).

A firm's managers may also become cognizant of an activist's interest through less well-defined informational back channels, such as rumors or tipping. Gantchev et al. (2019) find evidence that a large cash inflow to an activist hedge fund signals a credible threat to firms in industries with which it is already familiar. They also identify educationally connected directors as a "threat channel" through which activist targeting may affect non-targeted firms in the same industry. Chabakauri, Fos, and Jiang (2022) show that trading volume can serve as a signal to managers that their firm has become a target of hedge fund activism. Regardless of the

mechanism, prior to the filing of a 13D, insiders at a significant number of firms are aware that their firm is the target of activism. This means these insiders have private information and may exploit their information to profit from the price runup at the public revelation of the hedge fund's stake.

Ours is the first study to examine the trading activity of insiders at targeted firms surrounding the filing of 13D forms by hedge funds. We analyze a large sample from 1994-2016. We examine the frequency of insider buying and find that, compared to the universe of all insider purchases, our sample contains significantly more insider opportunistic buys. The size of the buys is significantly greater than the sales, and the number and size of trades is significantly greater than in a matched sample, and compared to the firm's own past history. We also find that insider buys predict significantly higher 13D announcement returns.

We posit that profiting from the expected stock price appreciation is a motivation behind insiders' acquisition of shares of firms targeted by activist hedge funds. Once insiders become aware that an activist hedge fund is targeting their firm, they can buy stock in their own company expecting to profit. Why would they do this? Both Brav et al. (2008) and Klein and Zur (2009) report that hedge fund 13D filings result in a positive average abnormal stock price response of approximately 7% in the targeted firm, and this return does not dissipate. Insiders know that if and when the information of activist targeting of their firm becomes public, they will likely experience a significant, sustained jump in stock price. The positive stock price response to the 13D filing is predicated upon changes in firm policy expected by the shareholders to result from the hedge fund activism. Indeed, although 13D announcement abnormal returns are 7.72%, we find that profits to insiders who buy average 12.09%. We find that net insider buys predict

greater abnormal returns at the filing, whereas net insider sells have no predictive power for abnormal returns.

We investigate why insider buying tends to predict announcement returns. One can argue that the manager knows his firm's type (i.e. poorly run and a possible target) and buys shares in anticipation of becoming a target. However, it is also possible that the manager knows that his firm is being targeted by an activist hedge fund and either has private knowledge about the activist's proposal, or surmises its content based on credible threat signals and the past campaigns of activist funds or information received through threat channels. If the proposal is deemed good from a public market perspective and the manager will accede to some of the activist's proposals, he buys stock. If it is bad, he does not buy.

To distinguish between these two explanations, we use the same firm characteristics identified by Brav et al. (2008) to predict in a probit model whether a firm will become a target of activism. All of these characteristics are known to managers as well as the public, and thus a manager could presumably use this information to decide whether to buy stock in their own firm as a potential target. We then use the fitted probability (the inverse Mills ratio) in a second-stage regression to explain insider buying behavior. We find that insider buying does not seem predicated upon common firm characteristics that predict activist targeting. In sum, there appears to be no mechanical predictor on which they are basing their purchases. We posit that many insiders are buying based on private knowledge that their firm has become a focus of hedge fund activism.

We search 13D filings for evidence of early communication between hedge funds and managers and find that 25% of our sample has documented such discussions prior to the 13D filing. Firms with no early discussions experience information leakage in the twenty-day runup

to the 13D announcement. However, firms that have talked with the hedge fund do not; their information is impounded entirely at the announcement. We also find that firms with no early discussions experience significantly higher announcement returns. These results give rise to a number of insights. First, there is considerable information being traded on that does not come from direct talks with management. Second, insiders at firms having early talks with the hedge fund feel the increased scrutiny as possessors of inside information, knowing that this fact will be disclosed. We find they tend to purchase less than the otherwise unencumbered insiders at firms that have not had talks with the hedge fund. Third, the hedge fund tends to approach the target management when more persuasion is required and implementation of the activist's goals seems less certain. Overall, insider trading is more robust and more profitable when hedge funds do not discuss their plans with management before the 13D filing.

Does corporate culture influence insider trading? We examine three measures of poor corporate governance to see whether this has any association with the incidence of opportunistic insider trading. We look at whether the firm has investors who violate the short-swing rule or who report their trades late. In both cases we find that firms where these rules are flouted, insiders tend to buy opportunistically. Finally, the Gompers et al (2003) index of poor governance is found to correlate with opportunistic insider purchases.

Boyson and Pichler (2019) find that 43% of executives will publicly battle the activist hedge funds who demand changes in the target firm. Aiken and Lee (2020) find that activists that speak to management early are also more likely to escalate to a proxy contest, suggesting that management is often hostile to these early overtures. Furthermore, Gantchev (2013) documents that early negotiations between the activist and the target are usually unsuccessful. According to Boyson and Pichler (2019), if negotiations fail, then gaining more vote share can help mount a

more effective defense. Brav et al. (2014) provide a model where there are two types of agents, a large activist and many small activists. In their model, the large activist's campaign will succeed if the number of shares owned by all activists exceeds the number of shares held or controlled by management. Thus, accumulating stock can help to thwart the activist.

We argue that the acquisition of vote share may not be the sole motivation for the observed buying activity of insiders for several reasons. First, we review the literature on proxy contests and find that proxy contests are typically pivotal events, the outcomes of proxy contests rely on the support of other shareholders, and these tend to be large institutions that are deferential to management.[1] Second, we examine a sub-sample of firms in our data that experience proxy contests after the 13D filing. We find that insiders do not buy more shares in these firms than insiders at 13D targets that have no proxy contests. Third, we test whether insider buying is linked to less subsequent CEO turnover, greater adoption of poison pills, or an index of managerial entrenchment. None of these correlates with insider buying activity. In sum, vote accumulation is likely not the sole consideration for insider buying of shares, leaving financial benefit as a motivation. Insiders rationally buy shares in expectation of a positive abnormal return.

Our paper contributes to two strands of the literature. First, our study contributes to the literature on insider trading. While Seyhun (1986) shows that insider trades are not profitable after accounting for transaction costs and Seyhun (1988) finds that insider trades cannot always predict firm events, insider buys have been documented to have predictive power in smaller firms (Lakonishok and Lee, 2001) and in weakly governed firms (Ravina and Sapienza, 2010). Furthermore, Cohen et al. (2010) document that analysts with school ties to insiders outperform

[1] On institutional shareholdings proving critical in proxy contests see Appel, Gormley, and Keim (2019), Heath, D., et al. (2022), and Brav, A., Jiang, W., Li, T., & Pennington, J. (2020). On institutions being deferential to management see Bebchuk and Hirst (2019), Davis and Kim (2007), and Li (2008).

on their stock recommendations. Although many papers study insider trades and corporate events[2], our paper is the first to examine insider trades surrounding hedge fund activism.

Our paper also contributes to the growing literature on hedge fund activism. Clifford (2008), Klein and Zur (2009), and Boyson and Mooradian (2011) report that targeted firms respond with improvements in operating performance, and Gantchev et al. (2019) find that peers in the same industry as a target of hedge fund activism respond by making improvements to their operations. Aiken and Lee (2020) show that hedge funds often have early talks with targeted firms before filing a 13D announcement. Our paper sheds light on the personal response of insiders at targeted firms by examining opportunistic trading surrounding the 13D filing. While resistance to hedge funds by insiders has been documented, we are the first to show share acquisition by insiders.

II. Other Related Literature

How likely are managers to resist activist hedge funds or accede to their demands? This is an interesting question, given that we are studying insiders who buy stock ahead of the public announcement of such campaigns. There are several papers that address this issue.

Boyson and Pichler (2019) study the target firm's response to hedge fund activism according to whether the target ignores, negotiates with, or resists the activist. They note managers often have strong private incentives to resist, and that if managers decide on a path of hostile resistance, the market responds negatively. Thus, if the target response is overtly hostile, then the insider who buys stock may have difficulty achieving positive trading gains. Boyson and Pichler report that the resolve of the hedge fund to continue pursuing the campaign can

[2] See, for example, Gosnell et al., 1992; Seyhun and Bradley, 1997; Agrawal and Cooper, 2015; Agrawal and Nasser, 2012; Acharya and Johnson, 2010; Griffin et al. 2014.

overcome this hostile resistance and leads to similar outcomes to campaigns without hostile target resistance.

Bebchuk et al. (2020) examine the tendency for activist engagements to end in settlements. They find that approximately one fifth of activist campaigns end in a settlement with the target firm, often stipulating that the activist be given board seats. They argue that settlement agreements typically avoid commitments of direct action, instead focusing on board turnover. For example, they find that settlement agreements usually do not stipulate leadership changes in the firm. For purposes of our study, this means that managers believe that they will continue to have a job beyond the activist campaign and are free to implement only the changes they believe will benefit the firm.

Becht et al. (2017) study international activist engagements and find that one quarter of campaigns involve multiple hedge funds. These coordinated attacks by "wolf packs" result in higher returns for target shareholders. They report that activists in North America achieve outcomes in 61% of all engagements. They also report that achievement of outcomes is crucial in sustaining an initial positive stock price reaction to a 13D announcement. An implication for our study is that insiders who buy stock will have to accede to some activist demands, through negotiation or settlement, to retain their trading gains.

Chabakauri, Fos, and Jiang (2022) is a recent paper that is similar in spirit to ours. They argue that corporate insiders are able to filter trading volume to uncover activist trading activity prior to 13D announcements, and they develop a theoretical model for this based on order flows and trades. They also model strategic and pecuniary motivations for insiders to buy shares. Whereas their paper is focused on the filtering mechanism for information to reach insiders so they can trade, our paper is focused on the actual profit-taking activity of insiders.

Bhattacharya (2014) reviews the literature on profits to insider trading and finds mixed results. Some studies report that insider trades predict future stock returns, while other studies report that such signals appear unprofitable. Most studies rely upon the return predictability test to identify informed trading, meaning trades that correctly predicted returns were informed by definition. This approach has limitations as it assumes that informed traders always benefit from their trades. A notable exception is Cohen, Malloy, and Pomorski (2012) who propose a classification scheme that does not depend upon the stock's returns. Their algorithm separates trades into those that are routine and uninformative from those that are opportunistic and informative. They show that their algorithm effectively identifies information-based trading, with opportunistic trades earning significant returns while routine trades do not.

III. Data and Method

A. Data Sample

Our sample period runs from 1994 to 2016. Form 13D filings were hand-collected from EDGAR by searching over the years 2009-2016.[3] These filings were cross-checked against a list of known activist hedge funds to narrow the sample. The amount and stated purpose(s) of the activist stock acquisition was also recorded from the 13D filing. Insider trade data are from the Thomson Insiders database, which is tabulated from insider Form 4 filings, and institutional holdings data is from Thomson. Stock returns are from CRSP and financials are from COMPUSTAT.

The annual number of hedge fund 13D filings, as well as the number of targeted firms having insider trades, is displayed in Figure 1. While the number of 13D filings varies over the

[3] Data for the years 1994-2008 was generously provided by Agnes Cheng from the study "The Effect of Hedge Fund Activism on Corporate Tax Avoidance," *The Accounting Review*, 2012.

years, the proportion of filings with insider trades within the [-60, +60] window around the 13D filing date remains fairly stable. Overall, 59 percent of the activist targets have insider trades. Figure 1 also shows that our findings are unlikely driven by any sub-period in our sample from 1994 to 2016.

Summary statistics for the data sample are reported in Table I. The data are reported at the insider trade level, focusing on a [-60, +60] window around the 13D filing date. Our sample contains a total of 1,266 13D filings targeting 1,085 unique firms where insiders also traded within 60 days of the filing.[4] A total of 327 activist hedge funds are responsible for these 1,266 13D filings. The average buy trade size is approximately double the average sell trade size, and is significantly larger both before and after the 13D filing. Insider buying before the 13D filing indicates they may be trading on private information and will likely benefit from a share price increase at the 13D filing. Insider buying after the 13D filing is also rational because there is significant evidence that firms targeted by hedge funds continue to outperform on a risk-adjusted basis for three years after the hedge fund departs (Bebchuk, Brav, and Jiang, 2015). This evidence is consistent both with insiders accumulating shares for voting power and for longer-term price appreciation.

To visually compare the differences between insider buying and selling, Figure 2 shows the average size of opportunistic insider trades across the event window, where trade size is defined as the percent of number of shares outstanding. Trades are aggregated by week for ease of inspection to highlight any patterns. The figure shows a noticeable uptick in insider trading, especially buying, four weeks prior to the 13D filing, and this extends into the post-filing period.

[4] In results not tabulated, we compare insider trading one year prior to the 13D filing for 2,088 firms that had no insider trading in the window [-60, +60] surrounding the 13D filing to 1,266 firms that did have insider trading in this window. We find that firms with insider trading during [-60, +60] of the 13D filing are significantly (t = 8.99) more active traders, with 0.64 buys on average compared to 0.12 buys for firms with no insider trading during [-60, +60].

In our sample, there are relatively more opportunistic buys than in the general population of insider trades. Insiders are naturally long due to stock and option grants, so insider buying is generally less common than selling. For example, Cohen et al. (2012) report the ratio of number of buys to sells in their extensive universe is 53%. However, in our sample the ratio is 60% during [-60, +60] and is 65% in the [-60, -1] pre-filing period. In sum, insiders do more opportunistic buying and place larger orders, on average, ahead of 13D filings than do other opportunistic insider traders. For much of the literature (see, for example, Jeng, Metrick, and Zeckhauser (2003) and Tavakoli, McMillan, and McKnight (2012)), insider buys are found to be more informative than insider sells, so this increased level of buying activity ahead of 13D filings is of particular interest.

B. Identifying Opportunistic Trades

Insiders of a corporation are defined as the officers, directors, and any beneficial owners of more than 10% of the company's equity. Insiders may legally trade, but these trades must be promptly disclosed to the SEC. Trading on non-public material information is forbidden under securities law, beginning with the 1934 Exchange Act, and including subsequent refinements through rule-making, case law, supreme court decisions, and congressional acts (Bhattacharya (2014)). Even so, the definition of what constitutes material non-public information is not always clear. An extensive literature finds that insiders, on average, and in specific situations, earn positive abnormal returns from their trades. Some insiders presumably transact based upon the non-public information that they have, while others simply trade for liquidity purposes. Identifying information-based trading, however, is not straightforward. Most filtering algorithms examine stock price changes surrounding the trade in order to classify the trade as informative or

liquidity-based. Such returns-based algorithms have the drawback of assuming that opportunistic trades always profit, by definition. In contrast, Cohen, Malloy, and Pomorski (2012) propose a classification scheme that does not depend upon the stock's returns. Instead, their approach searches the trading history of the insider during the prior three years for a pattern, defined as trades placed in the same month each year. These trades are classified as being routine and uninformative. When three years of trade history is lacking, the trades are left unclassified. All other trades are classified as non-routine, or opportunistic, and potentially convey private information. They show that this algorithm effectively filters out half of all insider trades; the trades having no predictive power for future returns or firm news. The remaining half of trades contains all of the predictive power in the insider trading universe, information which they show is substantial.[5] In order to identify opportunistic insider trades, we adopt the Cohen, Malloy, and Pomorski (2012) algorithm, applied at the individual trade level.

IV. Results

A. Buy-Hold Abnormal Returns

In their study, Brav et al. (2008) report a 7.2% average buy and hold abnormal return (BHAR) surrounding 13D filings by activist hedge funds over the window [-20, +20], and Klein and Zur (2009) report a 7.2% BHAR over the [-30, +30] filing window. For comparison, we compute the BHARs over the [-20, +20] window for our sample and report the results in Table II. We find an average 41-day BHAR of 7.72%, with 3.85% coming from the 5-day window surrounding the filing. Overall, our results are consistent with previous findings on abnormal

[5] Specifically, they report that a long-short portfolio strategy mimicing the trades of opportunistic traders yields abnormal returns of 82 basis points per month (9.84% annually), while abnormal returns associated with routine traders are essentially zero. They also find that opportunistic traders are significantly more likely to have SEC enforcement action taken against them, and reduce trading following waves of SEC insider trading enforcement actions.

returns associated with hedge fund activism. This filing return is substantial and is potentially attractive to a corporate insider who has knowledge of a pending activist campaign.

It is generally believed that insiders in the C Suite, meaning those who hold the rank of CEO, CFO, or CIO, tend to be at an informational advantage over other insiders. Thus, we also partition the data by the C Suite to analyze BHARs of targets with only C Suite insider trades. Table II shows that the BHARs of targeted firms do not materially differ based on whether the insider who happens to trade is in the C Suite. The BHARs are a noisy measure of potential insider profit, so we next move on to an exact measure.

B. Profits from Insider Trades

We calculate insider trading profits using the method of Griffin et al. (2012). Specifically, profits are calculated from the closing price on the date of the trade that is recorded on Form 4 for any opportunistic insider trade falling within [-60, -1] of the 13D filing date. The insider return is calculated up to a cutoff of $t + 20$, where t is the 13D filing date. Results are reported in Table III, where we see in Panel A that those insiders who only sell have a mean return of -1.95%, whereas those who only buy have a mean return of 12.09%. Since the insider trading profits take into account the timing of the trades, higher profits for buy-only insiders compared to BHARs suggests that these insiders also have better timing of their trades. We note that there are very few insiders (19) who both buy and sell in this 60-day window, and they earn an insignificant average of 3.19%. Panel B reports the C Suite separately, which shows C Suite insiders earn nominally higher profits, but not substantially different from the larger group of insiders. Similar to our findings using BHARs, executives do not earn significantly higher profits compared to other insiders. In terms of economic significance, the average dollar return from an

insider trade is $196,738. However, the distribution is right-skewed. The median dollar return from a trade is $1,782 (p = 0.005) and the 75th percentile is $28,800.

Under Section 16b of the 1934 Securities Exchange Act, any profits earned from the purchase and subsequent sale (or sale and subsequent purchase) of a stock within a six-month time period must be returned to the company. This is known as the short-swing rule.[6] In order to see whether insiders are behaving rationally in relation to this rule, we examine the holding period of those who purchase stock within 120 trading days before a 13D filing. The results are shown in Figure 3. The figure shows the frequency counts for four distinct groups of insiders with net stock purchases in the 120 trading days before 13D filings. The first group, G1, lists no further trades in the database in the 120 trading days post-filing, and is the largest group. The second group, G2, shows net buying activity following the 13D filing. The third group, G3, sells within six months of buying, violating the short-swing rule. The fourth group, G4, sells more than six months after buying. We find that the group violating the short-swing rule is quite small, representing only 2.2% of the sample. Most buyers have a longer horizon, which is consistent with the fact that stock price gains due to activism do not tend to dissipate, especially when the target accedes to at least some activist demands. It is also consistent with the notion that insiders who buy wish to keep their gains.

C. Matching Firms

Firm insiders trade in their company stocks on a regular basis. Thus, to better gauge the extent of insider trading due to hedge fund activism, we compare the trades of our sample to insider trades at firms that do not experience hedge fund 13D filings. We construct a matching

[6] However, as Agrawal and Jaffe (1995) note, enforcement comes through a shareholder lawsuit, not from the SEC. If a shareholder or incentivized lawyer at the firm does not bother to monitor and to file a lawsuit, then the profits will not be recovered.

firm sample based on propensity score matching.[7] We require that the matching firms have had no 13D filing of their own within two years of the filing date of the sample firm to which they are matched. We then examine both the number and size of insider opportunistic trades for the matched firm and our sample firm over the same window surrounding the sample firm's 13D filing date.

The results are presented in Table IV. The number and size of trades for our sample firms are significantly larger than the matched firm sample for both buys and sells. However, this is especially true for buys. Our sample firms have three times the average number of sells as the matched firms, but eight times the average number of buys. The size of trades is five times larger for sells in our sample firms than the matched sample, whereas the buys are eleven times larger. Overall, this indicates that insiders at targeted firms are much more active opportunistic traders than the general population, especially in their buying activity.

D. Previous Insider Trades at the Same Firm

We next investigate insider trading activity at 13D target firms in the years prior to the firm becoming a target. We compare insider trades from the time when the firm was not a target of hedge fund activism to insider trades during the time leading up to the 13D filing. Results are presented in Table V. Panel A shows insider trades in the window [-60, -1] leading up to the 13D filing versus one year prior at the same firm. Results show that there are significantly fewer sells and significantly more buys taking place just prior to the 13D filing versus one year ago. The size of sells is twice as large just prior to the 13D filing as a year ago, whereas the size of buys is five times as large as a year ago. Panel B compares insider trades of targeted firms from the

[7] Firms are matched using the following characteristics: log (market equity), market leverage ratio, book-to-market, cash/total assets, sales growth, dividend payout, R&D/total assets, ROA, institutional ownership, Tobin's Q, prior 1-year return.

window [-60, -1] leading up to the 13D filing to two years prior at the same firm. The results are nearly identical to the one-year comparison in Panel A. Overall, the evidence from Table V shows that the insider trading activity leading up to the 13D filing is abnormal, and is characterized by less selling and more buying.

E. Do Insiders Predict Announcement Returns?

We have already established that insiders profit substantially on average from buying ahead of 13D filings. We next consider whether insider trades have any predictive power for 13D announcement returns. This would tell us if insiders are able to gauge the expected market impact based on the demands that hedge funds are privately making. For example, if a hedge fund pushes for a sale of the company, this is expected to be especially well-received by the market when announced. On the other hand, if a hedge fund proposes to restructure management this may have little impact on share price (Brav et al, 2008).

For each 13D filing, we calculate:

$$Net\,Trade\,by\,All\,Insiders^{\,\text{Stock } k} = \sum_{t=-60}^{-n} \sum_{All\ Insiders\ i} (Buy_i - Sell_i)$$

where Buy_i / Sell_i are trades by insider i in the window [-60, -n] (t = 0 is the 13D filing date), measured as the percentage of shares outstanding for stock k.

Table VI presents the results of regressing target stock returns on net insider trades. For predicting returns in the [-2, +2] window, we use trades from [-60, -3], and for predicting returns in the [-20, +20] window, we use trades from [-60, -21]. Panel A presents results using raw returns. In the first column, we find that net trades by insiders is positively correlated with the 13D filing announcement return. The coefficient for Net Trade by All Insiders becomes insignificant for the longer announcement return window [-20, +20]. This first regression

contains both net buys and net sells. It makes sense to analyze them separately as they may have a very different relationship to the returns. When we separately examine 13D filings with net insider purchases, we find that the coefficients for Net Trade by All Insiders are significantly positive for the [-2, +2] announcement return window. The results show that the larger the insider buys, the larger the announcement returns turn out to be at the 13D filing. Insider sells, on the other hand, have no predictive power for announcement returns. Insiders who buy do indeed seem to have some precognition about the eventual market impact of the demands that hedge funds are making. For the longer-term return window [-20, +20], we find no significance. However, we note that this is not surprising since most of the insider trading activity occurs within twenty days of the filing date. In Panel B of Table VI, we show that our findings are very similar when using market adjusted returns instead of unadjusted returns.

Because firm characteristics can impact announcement returns for 13D filings (Brav et al., 2008), in Table VII we regress [-2, +2] and [-20, +20] window returns on insider net trades controlling for firm size, book to market, price run up, and fraction of C suite trades. Since insider sells have no predictive power, we focus on net insider buys.[8] The finding that insider buys predict higher 5-day abnormal returns remains robust with these controls added. We also note that the fraction of C suite trades is marginally significant. This indicates that the firm's managers in particular are accurately assessing the eventual market impact of the hedge fund's demands, and trading accordingly.

[8] Insiders who net buy have 363 observations for the window [-2, +2]. When controls are added, the availability of firm book-to-market in particular causes the number of observations to drop to 251. When looking at the longer window [-20, +20], we require a firm to have had insider trades in the window [-60, -21], and not all of the firms have trades in this window, thus dropping the sample size from 363 to 251 (this number is unrelated to the [-2, +2] regression on controls which also has an observation size of 251; this is a coincidence). When adding controls, the need for book-to-market reduces the sample size further from 251 to 188.

F. Competing Hypotheses

The finding that insiders who opportunistically buy greater amounts of stock ahead of a 13D filing experience larger abnormal returns is suggestive that these insiders have private information. However, there are two competing hypotheses that could explain this finding. The first hypothesis is that the insider knows his firm's type, specifically, poorly run and a possible target, and buys shares in anticipation of becoming a target. In this scenario, the manager is essentially guessing based on observable firm characteristics that may attract a hedge fund activist. In the second hypothesis, the insider knows that his firm is being targeted by an activist hedge fund and either has private knowledge about the activist's proposal, or surmises its content based on credible threat signals and the past campaigns of activist funds or information received through threat channels. If the proposal is deemed good and he will accede to at least some of the activist's demands, he buys.

How can we distinguish between these two alternative hypotheses? Based on the hedge fund literature, including Brav et al. (2008) and Klein and Zur (2009), the following characteristics make a firm an attractive target: profitable with strong ROA, depressed stock price, low sales growth, "value" firms with high book-to-market and low Tobin's q, small or mid-sized companies (easier to gain voting power), and more institutional ownership. Brav et al (2008) also identify agency issues as an important determinant of firms that become targets of activism. Proxies for agency problems include excessive cash, low payout, low leverage, and excessive takeover defenses. Under the first hypothesis, it could be that insiders are playing the odds and placing long bets according to the same criteria used by activist hedge funds to identify target firms. To examine this possibility, we undertake a two-stage test to see whether insiders rely upon firm characteristics in making their stock purchase decisions. In the first stage, in the

spirit of Brav et al (2008), Klein and Zur (2009), and Boyson and Mooradian (2011), we model the probability of a firm becoming an activist 13D target using a probit regression. For the probit, we match each of our sample firms with three firms that did not become a 13D target in order to obtain a robust fit. We then compute the inverse Mills ratio from this first-stage probit and use this as an explanatory variable in a second-stage regression to predict insider buys.

G. Predicting 13D Filings

Results from our first-stage probit regression predicting 13D filings are presented in Panel A of Table VIII. Coefficients for the significant variables are in the direction expected in each case. We see that smaller firms are more likely to be targeted, as are firms with lower payout, higher ROA, higher institutional ownership, and low Tobin's q. We also find that R&D intensive firms are more likely to be targeted, and this result differs from that of Brav et al. (2008), who find no significant relationship. Based on this fitted model, we compute the inverse Mills ratio for the probability of being targeted for each of our sample firms and refer to this as lambda, λ.

For our second-stage regression, we explain insider buying using λ and controls for firm size, leverage, book-to-market, and the prior year's stock return. Results are presented in Panel B of Table VIII. We note that λ is not significant, failing to lend support to the hypothesis that insiders buy based on observable firm characteristics on the chance that they may be targeted by an activist. The alternative hypothesis is that insiders are trading on private information that they possess that their firm has become targeted by a hedge fund. We argue that this is the most reasonable explanation for our results.

H. Linking Insider Buying to Corporate Culture and Entrenchment

We next test whether the firm is prone to poor governance and lax enforcement of rules by using three measures. The first is an indicator variable for whether the firm has had any investors engage in a short-swing trade. Presumably investors only do this if they think that they can get away with it unnoticed and keep the profits. The second is an indicator variable for whether the firm has had any investors report their trades late to the SEC. This means reporting a trade more than two trading days later after 2002, and more than one month later for trades occurring before 2002. This also reveals a tendency to flout the rules, which may lead to increased trading profits for the insider. Third, we also include the Gompers, Ishi, and Metrick (2003) governance index as a control to capture whether the firm has a good or bad corporate culture. Their index captures twenty-four provisions followed by the Investor Responsibility Research Center (IRRC). We note that this measure is only available for a shorter sample period and only for the largest firms, so this variable only appears for a small subsample.

Some hedge fund campaigns result with the target firm's management being turned over, and thus managers may accumulate votes to stave off this outcome. To further explore this issue, we examine whether insiders' buying activity is linked to fear of losing their jobs. We use the E-index measure of entrenchment of Bebchuk, Cohen, and Ferrell (2009) as an explanatory variable for insider buying activity. We also test whether CEO turnover at the target firm in the years following a 13D filing is linked to insider buying. In particular, if buying is occurring to accumulate vote share based on job concerns, then CEO turnover should be negatively correlated with insider purchases. We also examine the adoption of poison pills by the target firm as a form of entrenching management to see whether this is linked to insider buying activity.

Table IX presents a number of results. The dependent variable in the regressions is insider buys, defined as the number of trades. In Models I-III we test for indicators of a corporate culture where enforcement of the rules may be lax. Model I has a short-swing indicator, which is positive and significant. This shows that firms where investors violate the short-swing rule are also more prone to insider buying activity. Model II has a late reporting indicator, which is positive and significant. This shows that firms where insiders are prone to breaking the rules on reporting their trade in a timely fashion are also more prone to insider buying activity. Model III contains the governance index, where a higher governance index indicates a "dictatorship" and a low index value indicates a "democratic" governance structure. Although the number of observations drops, the governance index is found to be significant and positive. This indicates that greater insider buying is associated with a poor governance structure, a result consistent with Ravina and Sapienza (2010), who find that independent directors make substantial abnormal returns in their purchases, especially in firms with weak governance.

We next turn to measures of insider job security to see whether they are linked to share accumulation. In Model IV we test for managerial entrenchment using the E-Index of Bebchuk, Cohen, and Ferrell (2008).[9] The results show no link between insider buying and entrenchment. We also test whether CEO turnover is less prevalent in target firms with greater insider buying. If so, this might give some credence to the argument of share buying for the purpose of vote accumulation (for job protection). We test for a link between insider buying and CEO turnover within one or three years following the 13D filing and find no significant relationship. The results are found in Appendix A. We also examine the adoption of poison pills in the year following the filing of a 13D to see if this is linked to insider buying. We find no association

[9] Their index uses six indicators of managerial entrenchment: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes and supermajority requirements for mergers and charter amendments.

between adoption of poison pills and insider buying at target firms. The results are provided in Appendix B. Overall, we find no evidence that measures of insider entrenchment are linked to insider buying activity, lending no support to the vote accumulation argument.

We have presented evidence that corporate culture is related to opportunistic insider trading ahead of 13D filings. Our results show that firms where short-swing trades and late-reporting occur are more prone to insider purchases. Where these sets of rules are not followed, it is more likely to see opportunistic insider trading, suggesting a culture of lax monitoring at the firm. The finding that the governance index is significantly positive in explaining insider buying highlights that a bad corporate culture is associated with more insider purchases ahead of 13D filings.

I. When Management is Known to Have Talked to the Hedge Fund

It is surprisingly common for hedge funds to approach target management prior to the filing of a 13D announcement to discuss their plans. Aiken and Lee (2020) document that 25% of their sample of activist hedge funds take this approach, and such communication is disclosed in the 13D filing itself. Accordingly, we examine all of the 13D filings in our sample for evidence of such early talks with management. We also find approximately 25% of our sample contains such disclosures of early discussions between the hedge fund and target management. We split the sample based on these early discussions to see what further insights may be gleaned.

Table X reports the abnormal returns surrounding 13D filings separately for firms that have had prior discussions with management versus those that have not. The five-day returns are significantly larger for the sample of early talk firms. However, the forty-one-day returns are significantly larger for the sample of firms that had no such discussions. To get a clear picture of

what is happening we illustrate the BHARs graphically in Figure 4. The pattern of information diffusion reveals a stark contrast between the two groups. For the firms having no early talks with management, there is buying activity prior to the announcement day, as the information gets incorporated and insiders are freely able to capitalize on their private knowledge. For firms having early talks with management, their hands become tied in a sense, as they know they are now subject to scrutiny as possessors of inside information, a fact that will be disclosed. For these firms, we do not observe early information leakage, but only a jump at the announcement. We note that the pattern of information leakage for the firms having no early talks with management substantiates our argument that insiders are getting the information elsewhere and trading on it. So, what to make of the significantly higher returns when there are no early talks? We believe that some proposals take more persuasion, and are less likely to be implemented, and it is these proposals that hedge funds take to management for discussions. For example, Aiken and Lee (2020) find that activists that speak to management early are also more likely to escalate to a proxy contest, suggesting that management is often hostile to these early overtures. These may be deemed "low value" in the sense that they are less likely to be implemented. Thus, we have a separating equilibrium that shows up in the announcement returns.

The announcement returns in Figure 4 suggest different trading patterns by insiders according to whether there are early discussions. We next examine the net trades and number of trades of insiders in Table XI based on whether they have had prior discussions with the hedge fund. As previously discussed, some proposals of hedge funds are deemed to be of high value, and some are not. Therefore, we report results for positive announcement returns separately from negative announcement returns. In Panel A, which are high-value proposals, we see that insiders buy significantly more when there are no early discussions with the hedge fund. This is true for

the buy-only insiders whether measured by net trades or number of trades. This shows that formal discussions with the hedge fund is a drag on insider buying activity. There are no significant differences in the case of low-value proposals, which are reported in Panel B.

In Table XII we report insider profits classified by whether the firm has had early discussions with the hedge fund. In Panel A there is no early talk between the firm and the hedge fund, and insiders who only buy earn a 14.49% return. In Panel B there is prior discussion between management and the hedge fund, and insiders who only buy earn 5.33%. This is still significantly profitable. But it is clearly much more profitable for the insiders not to have been engaged by the hedge fund prior to the 13D filing.

J. Geographic Proximity Between Activist and Target

We have presented evidence of information leakage and insider trading leading up to a 13D filing, and have shown that this is independent of cases where there are early discussions between management and the hedge fund. So insiders are figuring out that their firms are targets. One potential avenue for this information leakage to occur is through geographic proximity between the targeted firm and the activist hedge fund. Presumably, managers who run in the same social circles, and who use the same professional services and institutions, and who can monitor the activities of activist hedge funds through local media, may be able to infer whether their firm is going to be targeted. To test for this, we gather zip codes of targeted firms and match them to the zip codes of the activist hedge funds that target them. In Table XIII we report results from regressing insider trades on the geographic distance between the targeted firm and the activist hedge fund. We regress both number of trades and size of trades against a continuous measure of distance and controls. We alternatively use an indicator variable for distance if the

distance between the firm and the activist hedge fund falls in the first quartile, meaning they are close. We find that the continuous measure of distance is not significant in explaining insider trades. However, the indicator variable for being geographically close is significant in explaining the size of insider trades. This provides evidence that geographic proximity plays a role in the dissemination of information about hedge fund targeting.

K. Insider Trading and Proxy Fights

We have presented evidence that corporate insiders buy stock in their firm ahead of hedge fund 13D filings and financially benefit from this trading activity. We argue that they are opportunistically exploiting private information about an impending hedge fund campaign for financial gain. Another possible motivation for insiders to buy shares is to accumulate voting power in the event of a proxy fight. Two considerations are relevant here. First, the size of insiders' positions and the size of activist hedge funds' positions are usually similar. For example, Fos and Jiang (2016) find that the mean ownership of incumbents is 10.91%, and the mean for dissident groups is 9.62%. Second, voting in proxy contests is typically a pivotal event. For example, Brav et al. (2024) find that dissidents win 51.7% of contests. So, it is possible that insiders are interested in buying marginal shares in order to win in proxy fights. However, based on our understanding of the literature, we believe that firm insiders' buying activities prior to a 13-D filing are not solely motivated by increasing their voting power. We discuss this literature below, and then we examine our own data for evidence of vote accumulation ahead of proxy contests.

First, the goal of the activists is usually not to seize control from the target firms' management. Brav, Jiang, and Kim (2010) indicate that "activist hedge funds do not, in general,

aim to take control of their target firms. Instead, they hope to facilitate value-enhancing changes as minority shareholders." Gantchev (2013) finds that only 7% of activist campaigns result in a proxy fight.

Second, the SEC Exchange Act Section 16 typically limits dissident shareholders' stakes to less than 10%, whereas firm insiders, on average, hold more than this threshold. Specifically, once an activist's stake or a group of activists' collective stakes exceed the 10% ownership mark, they are deemed insiders and are subject to stringent SEC trading regulations. Since the rule caps activists' holdings and thus their voting power, firm insiders do not need to worry that activists' ownership and voting power would surpass theirs if they do not buy more shares. Empirical evidence highlights this ownership disparity. For example, Fos and Jiang (2016) found the mean ownership of incumbents to be above 10% (10.91%), whereas the mean for dissident groups is less than 10% (9.62%). Other studies also confirm that the mean of activists' ownership is smaller than 10%, while firm insiders hold more than 10%. Gantchev (2013) reports that the mean (median) initial ownership stake of dissidents at the start of a campaign is 8.27% (8.00%) of the target's outstanding shares. The mean (median) maximum ownership stake over the duration of the campaign is 9.11% (9.00%). He concludes that activists do not significantly increase ownership during a campaign. Brav, Jiang, and Li (2022) report that the median (maximum) percentage stake that a hedge fund takes is 6.6 (9.4) percent. Similarly, Greenwood and Schor (2009) report a 9.8 percent average ownership of activists.

Third, several empirical studies suggest that the key to retaining or capturing corporate control lies in garnering the support of other shareholders. The literature finds that management, in general, has the support of other shareholders who own the majority of voting shares. For example, Brav, Jiang, and Li (2021) find that "they [hedge fund activists] need to work with and

win support from other shareholders, especially on issues that require shareholder voting, either in shareholder proposals or proxy contests." Brav et al. (2021c) show that dissidents never win a proxy contest if they do not receive support from any of the Big Three institutions (BlackRock, Vanguard, and State Street). Bebchuk and Hirst (2019a) argue that the Big Three has incentives to be "excessively deferential" to firm management. The literature documents various reasons why the majority of other voters have pro-management voting preferences. For instance, Davis and Kim (2007) find business ties between management and mutual funds make the funds less likely to vote against management. Li (2008) finds that proxy advisors' voting recommendations are biased toward management.

To test whether insiders tend to buy more shares ahead of proxy contests, we examine a sample of proxy contests over the period 2006-2017.[10] We are able to match 96 proxy contests with our 13D sample. Results comparing trading activity of insiders at firms with a proxy contest to those without a proxy contest are presented in Table XIV. When looking at all insider trades, there is no significant difference between the two groups. When focusing on insiders who buy only, the insiders at firms with a proxy contest actually buy significantly *less.* In unreported results, we find there is no significant difference in announcement returns between these two groups. Thus, the financial motive for each group is the same, yet insiders at proxy contest firms do not acquire more shares.

In sum, we review the literature on proxy contests and we examine proxy contests in our data. Based on the literature, persuading other shareholders is likely to be pivotal to the outcome of any contest. We therefore believe that vote accumulation may not be the sole motivation for buying shares. In our data, we do not observe insiders significantly increasing share purchases

[10] The proxy contest data are from Brav, Alon, W. Jiang, T. Li, and J. Pinnington (2020, 2024). We thank the authors for kindly providing us with the data.

before proxy fights. Instead, we find that they buy significantly less. To interpret this finding cautiously, we do not rule out the possibility that insiders are interested in combating proxy fights. However, our finding suggests that accumulating more voting power is not the sole motivation for insiders to buy shares, as share acquisition is costly. Our findings are consistent with a model of costly buying, where insiders only buy shares if the financial incentive induces them to do so. Insiders' expectations of the net financial returns from buying shares affect the amount of shares they choose to accumulate, and they acquire shares in expectation of a positive abnormal return.

V. Conclusion

The large positive stock price reaction to a hedge fund 13D filing is a well-established fact, known to investors and corporate insiders alike. Insiders can become aware that their firm is the target of an activist hedge fund well before the public does, through private channels or direct early communication with the hedge fund, and then they may choose to buy stock in anticipation of an escalation of the activist's tactics and eventual public disclosure of the activism. We have shown that insiders engage in more opportunistic buying ahead of 13D filings than a control group and compared to their own past history. We also find that insider buys have predictive power for 13D announcement returns, and insiders who buy before a filing earn substantial profits, averaging 12.09%, while the average announcement abnormal return is 7.72%. We have, therefore, made the case that profiting from the expected upswing in stock price is a strong incentive to buy shares. On the other hand, we find empirically that insiders do not accumulate more shares in activist campaigns that result in a proxy contest. Although we have not ruled out the accumulation of vote share as a motive for buying, based on the literature and our empirical

findings, we argue this motivation alone does not provide a satisfactory explanation of insiders' buying activities. These findings make a significant contribution to both the hedge fund activism literature and the insider trading literature. The fact that the target firm insider seems to have competing motivations in their personal and professional responses to the activism is also an important insight of our results. Prior work establishes that the target firm must accede to at least some of the hedge fund's demands in order for the announcement gains to persist. Our work adds a further motivation for the target insiders to implement some hedge fund demands: to lock in their trading gains.

While proving insider trading on private information is difficult, we eliminate an alternative explanation. It could be that an insider, seeing that their firm has many characteristics that make it an attractive target for an activist, simply buys stock to play the odds. Our two-stage test shows that insider purchases are not predicated upon common observable firm characteristics that predict activist targeting. There would seem to be no credible explanation for the results we find, other than insider trading on private information.

We find that firms having early talks with hedge funds earn lower announcement returns, suggesting that hedge funds approach targets with proposals that take more persuasion and are less likely to be implemented. We also find that this group of insiders is more reserved in their buying activity than insiders at firms that were not engaged by the hedge fund, likely because they know they are subject to heightened scrutiny. Firms not having early discussions show considerable information leakage in the time leading up to the 13D filing, meaning they are trading on another information source, and these insiders who buy earn an impressive 14.5% return. The weight of the evidence shows that insiders are benefiting substantially from private information, especially when it does not come directly from the hedge fund.

Finally, we find evidence linking poor corporate governance with increased opportunistic buying ahead of 13D filings. Our findings have both ethical and legal implications. If a manager has been approached by an activist hedge fund to discuss possible changes in corporate policy, should the manager be required to publicize this? Even more pertinent, this should almost certainly be considered material information managers should refrain from trading on. What if the information is obtained indirectly through threat signals or private channels? Even in this case, transparency and disclosure, or to refrain from trading, would be the most ethical course. Given the strength of our results, we recommend that the SEC publicize guidance on activist campaigns emphasizing the fiduciary duty that insiders have in handling material information in this circumstance. Enforcement actions may further deter such behavior.

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Figure 1
Sample Distribution of 13D Filings

The figure shows the annual number of hedge fund 13D filings in the sample as well as the annual number of 13D filings that have insider trades associated with them, defined as opportunistic insider trades in the 60 days before and 60 days after the 13D filing. The sample period is 1994-2016.

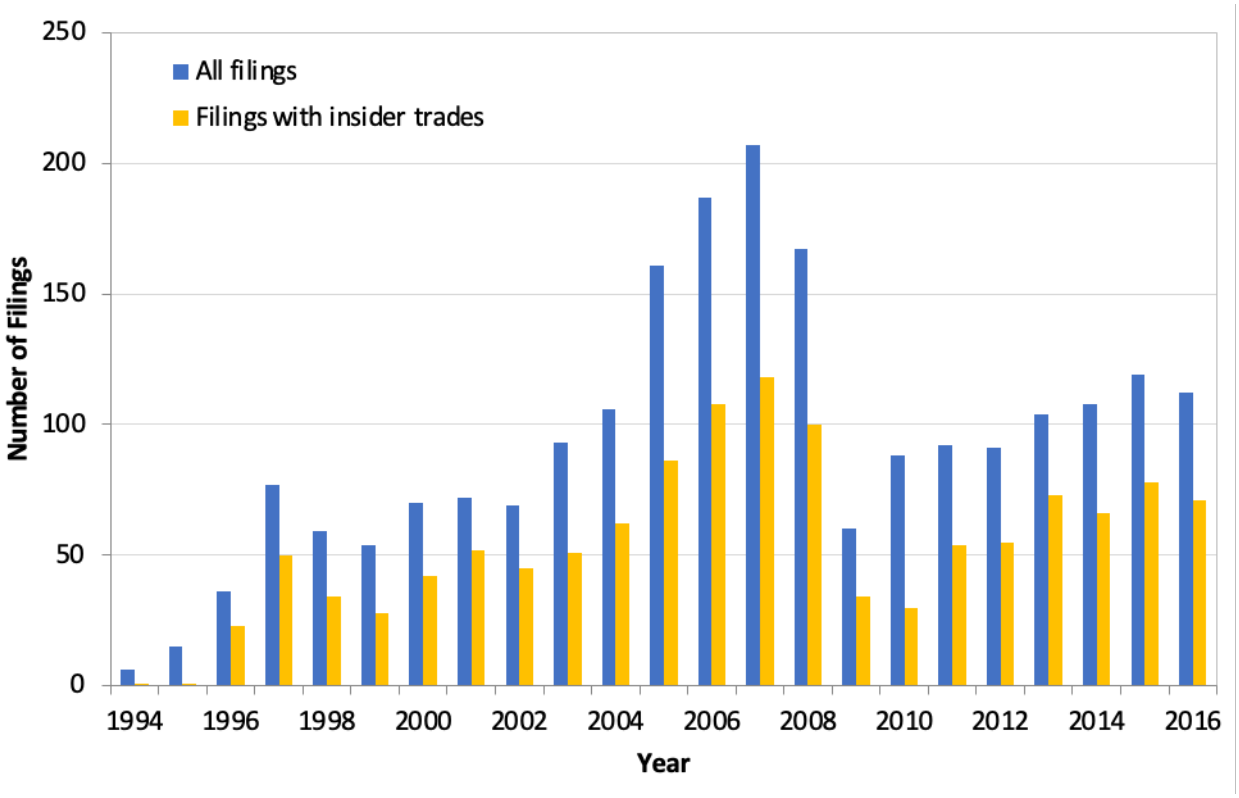


Figure 2
Insider Trades Across Event Time by Trade Size

The figure shows the average size of insider trades, where trade size is defined as the percent of number of shares outstanding. Insider trades are tabulated for the window [-60, +60] where the 13D filing date is event day $t = 0$. Trades are aggregated over weeks, meaning five days. Insider buys are graphed as positive numbers and insider sells are graphed as negative numbers.

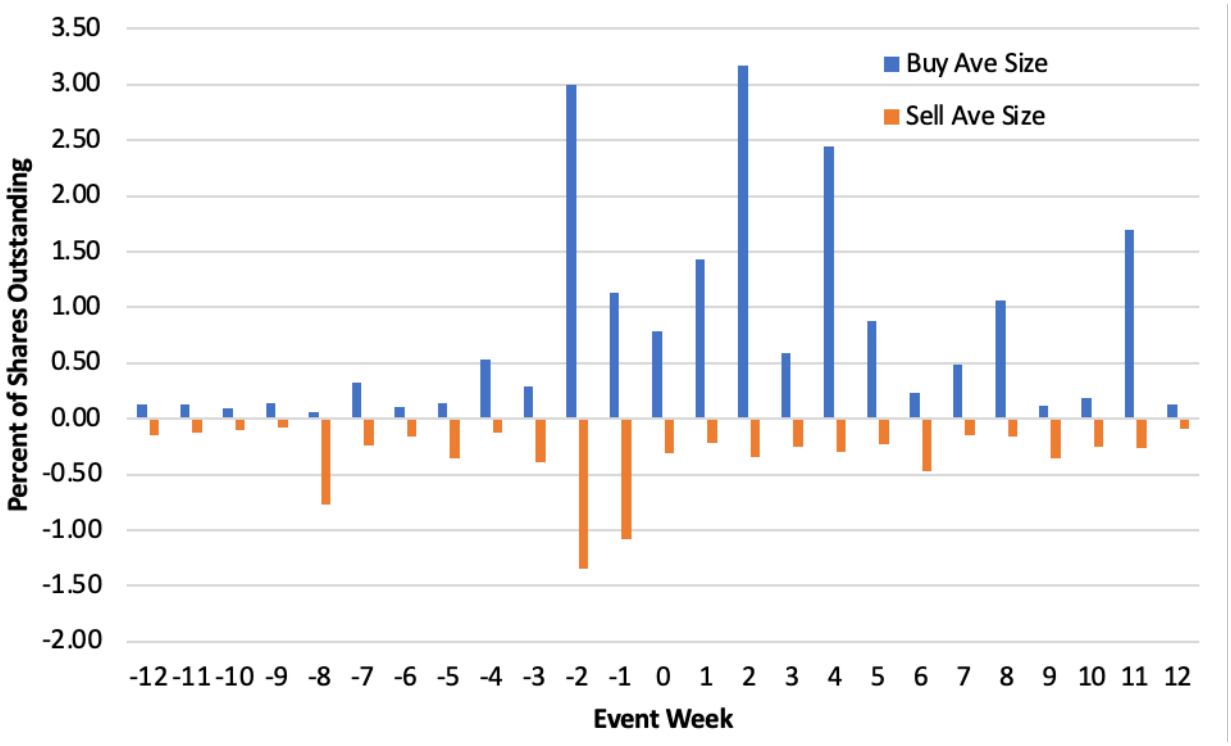


Figure 3
Holding Period of Insiders With Net Buys Before 13D Filings

The figure shows the frequency counts for four distinct groups of insiders with net stock purchases in the 120 trading days before 13D filings. The first group, G1, lists no further trades in the database in the 120 trading days post-filing. The second group, G2, shows net buying activity in the 120 trading days following the 13D filing. The third group, G3, sells within six months of buying, violating the short-swing rule. The fourth group, G4, sells more than six months after buying.

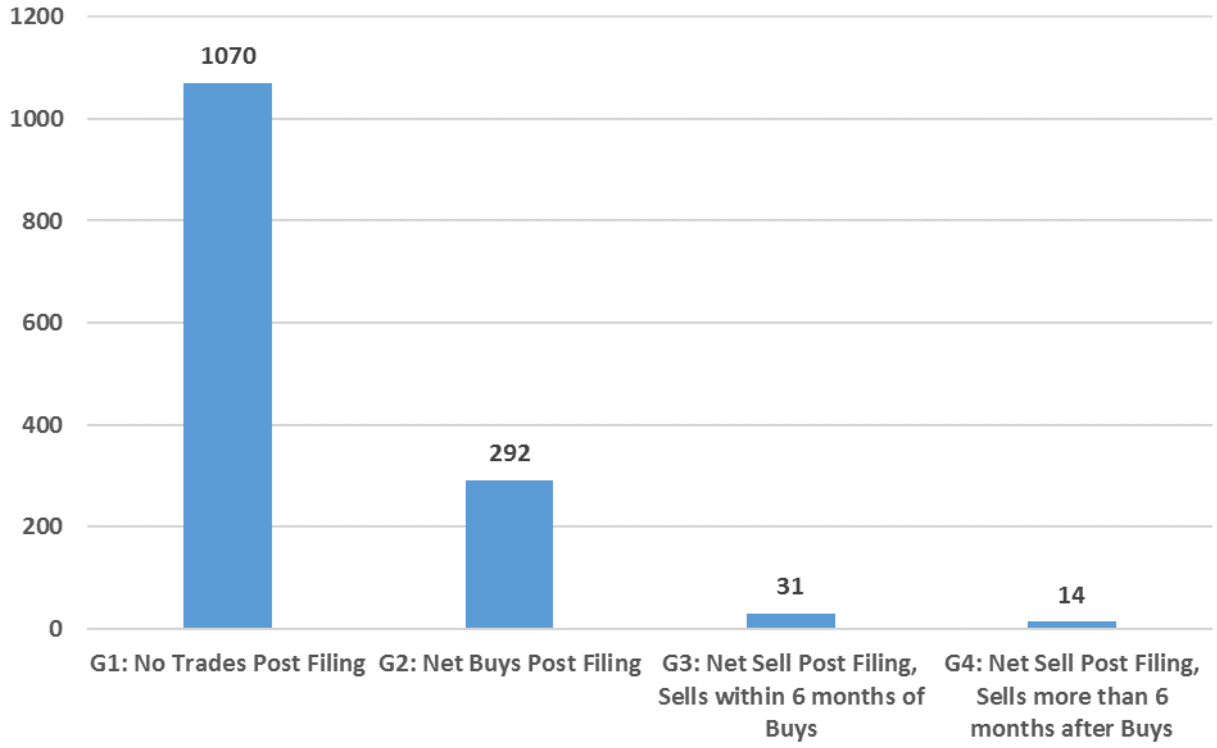


Figure 4
Announcement Returns

The figure shows the cumulative abnormal returns for a forty-one day window surrounding the announcement of a 13D filing, where the filing date is day $t = 0$. Abnormal returns are computed as returns net of the CRSP value-weighted market portfolio. Returns are displayed separately according to whether management has had discussions with the hedge fund about the activist's plans prior to the 13D filing. The discussions are documented in the 13D filing itself.

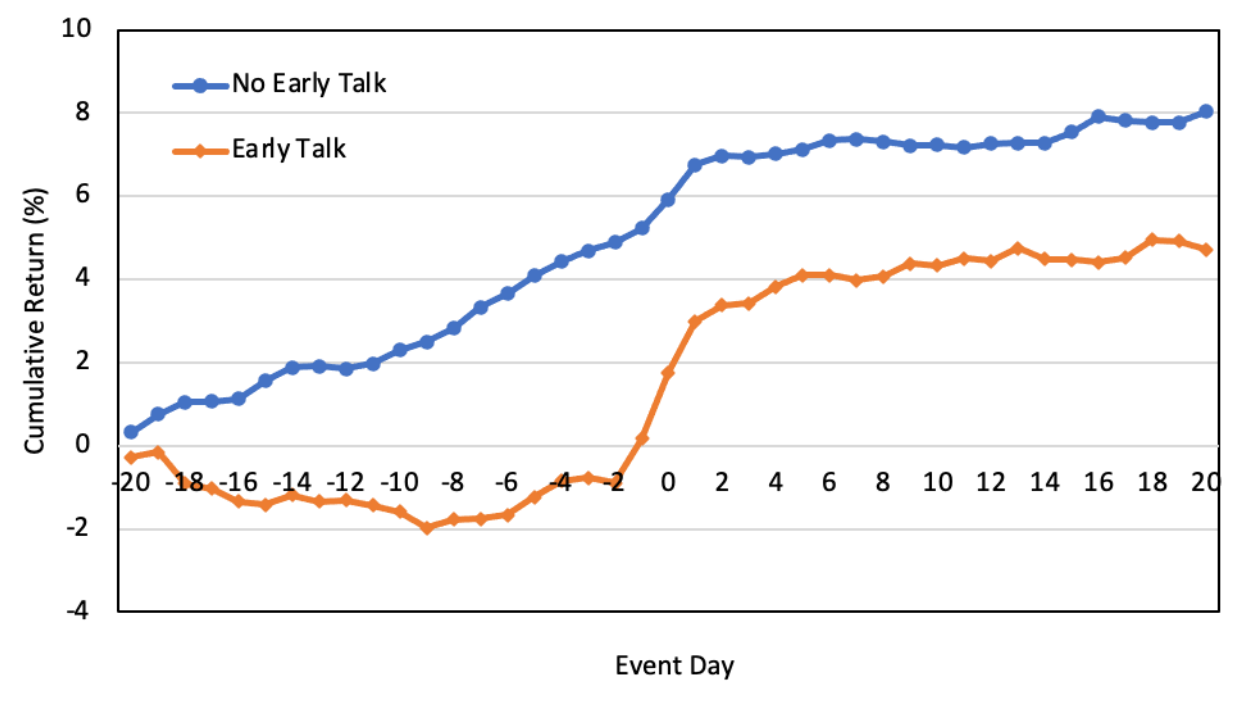


Table I
Insider Trades Around Hedge Fund 13D Filings

The table reports descriptive statistics for the sample of opportunistic insider trades surrounding 13D filings by activist hedge funds. The All Trades, Pre-filing, and Post-filing columns refer to insider trades in the [-60, +60], [-60, -1], and [0,+60] windows, respectively. Opportunistic insider trades are defined as in Cohen et al. (2012) The sample period is 1994-2016.

	All Trades	Pre-filing	Post-filing
Number of Trades	8,906	4,793	4,113
Number of Insiders	3,714	2,252	2,030
Number of Firms	1,085	842	783
Number of Hedge Funds	327	284	270
Number of 13D Filings	1,266	947	886
Number of Insider Buys	3,347	1,885	1,462
Number of Insider Sells	5,559	2,908	2,651
Buy Trade Size ($)	3,572,978	1,175,239	6,664,456
Buy Trade Size (% of shares out)	0.848	0.624	1.136
Sell Trade Size ($)	1,505,813	1,781,429	1,203,476
Sell Trade Size (% of shares out)	0.363	0.446	0.272

Table II
Abnormal Returns Around 13D Filings

The table shows the mean buy and hold abnormal returns (BHARs) for the sample of hedge fund 13D filings, where the filing date is event day $t = 0$. BHARs for both five days ([-2, +2]) and 41 days ([-20, +20]) surrounding the filing date are presented. Abnormal returns are computed as returns net of the CRSP value-weighted market portfolio. We present results for all insiders, for C Suite insiders (CEOs, CFOs, COOs, CTOs, and CIOs), and for Non- C Suite insiders.

Window	All Insiders	C Suite Only	Non- C Suite
[-2, +2]	0.0385	0.0464	0.0389
[-20, +20]	0.0772	0.0705	0.0772

Table III
Profits from Insider Trades

The table presents the profits from insider trades. Profits are calculated from the closing price on the date of the trade that is recorded on Form 4 for any opportunistic insider trade falling within [-60, -1] of the 13D filing date. The holding period return is calculated until t+20, where t is the 13D filing date. Results for all insiders are in Panel A and results for C Suite insiders (CEOs, CFOs, COOs, CTOs, and CIOs) are in Panel B.

Panel A: All Insiders	Obs	Mean Ret (%)	*p*-value
Sell Only Insiders	1286	-1.95	0.0039
Buy and Sell Insiders	19	3.19	0.4774
Buy Only Insiders	902	12.09	<0.0001

Panel B: C-Suite Only	Obs	Mean Ret (%)	*p*-value
Sell Only Insiders	174	-2.11	0.1910
Buy and Sell Insiders	4	5.50	0.5824
Buy Only Insiders	142	12.45	<0.0001

Table IV
Insider Trades of 13D Target Firms versus a Matched Sample

The matching sample of firms is constructed by using propensity score matching, while requiring that no 13D filing occurred for the matching firm within ±2 years of the filing date. For each 13D target firm, three matching firms are identified. Firms are matched along the dimensions of Year, Industry, Market Value of Equity, Market Leverage Ratio, Book-to-Market, Cash scaled by Total Assets, Sales Growth, Dividend Payout, R&D expenses scaled by Total Assets, ROA, Institutional Ownership, Tobin's q, and Prior 1-Year Return. Opportunistic insider trades for the matching firm falling within [-60, -1] of the 13D filing date is measured for comparison to the 13D target firm. Size of trades is the total size of all trades associated with a given 13D filing, where trade size is measured as the percentage of shares outstanding. ***, **, and * denote statistical significance for the 1%, 5%, and 10% levels, respectively.

	Sell		Buy	
	Number of Trades	Size of Trades	Number of Trades	Size of Trades
13D Firms	4.49	-0.89	4.19	0.76
Matched Sample	1.66	-0.17	0.51	0.07
Difference	2.83***	-0.72***	3.68***	0.69***
t-stat	(11.78)	(7.17)	(14.33)	(9.15)
13D Firm Obs	476	476	301	301
Matched Firm Obs	1425	1425	902	902

Table V
Insider Trades of 13D Target Firms versus Prior Years

The table compares opportunistic insider trades falling within [-60, -1] of the 13D filing date to insider trades of the same target firm in prior years. Size of trades is the total size of all trades associated with a given 13D filing, where trade size is measured as the percentage of shares outstanding. Panel A presents comparison results for the pre-filing period [-60, -1] and an equivalent period one year prior, and Panel B presents results for the pre-filing period [-60, -1] and an equivalent period two years prior. ***, **, and * denote statistical significance for the 1%, 5%, and 10% levels, respectively.

Panel A: Insider Trades Versus One Year Prior

	Sell		Buy	
	Number of Trades	Size of Trades	Number of Trades	Size of Trades
Time of Filing	2.71	-0.77	2.51	0.91
One Year Prior	3.64	-0.34	1.84	0.18
Difference	-0.93***	-0.43***	0.67***	0.73***
t-stat	(-4.67)	(-5.20)	(3.39)	(6.99)
Observations	994	994	715	715

Panel B: Insider Trades Versus Two Years Prior

	Sell		Buy	
	Number of Trades	Size of Trades	Number of Trades	Size of Trades
Time of Filing	2.75	-0.78	2.58	0.93
Two Years Prior	3.36	-0.40	1.58	0.14
Difference	-0.61***	-0.38***	1.01***	0.79***
t-stat	(-2.93)	(-4.33)	(4.89)	(7.34)
Observations	981	981	694	694

Table VI
Regression of Stock Returns from 13D Filings on Net Insider Trades

The table presents regression results of stock returns surrounding 13D filings on net trades by corporate insiders. We define net trades as follows. For each 13D filing, we calculate:

$$Net\,Trade\,by\,All\,Insiders^{\,\text{Stock } k} = \sum_{t=-60}^{-n} \sum_{All\ Insiders\ i} (Buy_i - Sell_i)$$

where Buy_i / $Sell_i$ are trades by insider i in the window [-60, $-n$] (t = 0 is the 13D filing date), measured as the percentage of total shares outstanding for stock k. Results based on returns over the five days surrounding the 13D filing date as well as the 41 days surrounding the filing date are reported. When returns are for the window [-2,+2], Insider Net Trade is measured over [-60,-3], and when returns are for the window [-20,+20], Insider Net Trade is measured over [-60,-21]. Panel A uses raw returns as the dependent variable, and Panel B uses the market-adjusted return. *T*-statistics are reported below the coefficients in parentheses. ***, **, and * denote statistical significance for the 1%, 5%, and 10% levels, respectively.

Panel A: Raw Returns

	All Filings		Filings with Net Insider Buy		Filings with Net Insider Sell	
	Ret [-2,+2]	Ret [-20,+20]	Ret [-2,+2]	Ret [-20,+20]	Ret [-2,+2]	Ret [-20,+20]
Net Trade by All Insiders	0.0055*	-0.0007	0.0089***	-0.0016	-0.001	-0.0011
	(1.87)	(-0.86)	(6.72)	(-0.08)	(-0.94)	(-1.46)
Constant	0.0387***	0.0745***	0.0148*	0.0923***	0.0357***	0.0643***
	(6.34)	(7.46)	(1.81)	(4.51)	(5.47)	(5.71)
Adj. *R*-Sqr	0.154	-0.0013	0.502	-0.004	0.0016	-0.0015
Observations	919	687	363	251	553	435

Panel B: Market Adjusted Returns

	All Filings		Filings with Net Insider Buy		Filings with Net Insider Sell	
	Adj. Ret [-2,+2]	Adj. Ret [-20,+20]	Adj. Ret [-2,+2]	Adj. Ret [-20,+20]	Adj. Ret [-2,+2]	Adj. Ret [-20,+20]
Net Trade by All Insiders	0.0054*	-0.0001	0.0086***	0.0014	-0.001	-0.0004
	(1.88)	(-0.09)	(6.69)	(0.07)	(-0.90)	(-0.57)
Constant	0.0375***	0.0703***	0.0154*	0.0834***	0.0338***	0.0624***
	(6.32)	(7.29)	(1.91)	(4.23)	(5.43)	(5.74)
Adj. *R*-Sqr	0.155	-0.0015	0.498	-0.004	0.0016	-0.0022
Observations	919	687	363	251	553	435

Table VII
Regression of Stock Returns from 13D Filings on Net Insider Buys Only

The table presents regression results of stock returns surrounding 13D filings on net trades by corporate insiders, only if the net trade is a buy. We define net trades as follows. For each 13D filing, we calculate:

$$Net\,Trade\,by\,All\,Insiders^{\text{Stock } k} = \sum_{t=-60}^{-n} \sum_{All\ Insiders\ i} (Buy_i - Sell_i)$$

where Buy_i / $Sell_i$ are trades by insider i in the window [-60, -n] (t = 0 is the 13D filing date), measured as the percentage of total shares outstanding for stock k. Results based on returns over the five days surrounding the 13D filing date as well as the 41 days surrounding the filing date are reported. When returns are for the window [-2,+2], Insider Net Trade is measured over [-60,-3], and when returns are for the window [-20,+20], Insider Net Trade is measured over [-60,-21]. The dependent variable is the raw buy-hold return. *T*-statistics are reported below the coefficients in parentheses. ***, **, and * denote statistical significance for the 1%, 5%, and 10% levels, respectively.

	Ret [-2,+2]	Ret [-2,+2]	Ret [-20,+20]	Ret [-20,+20]
Insider Net Trade (Buy)	0.0089***	0.0096***	-0.0016	0.0080
	(6.72)	(13.47)	(-0.08)	(0.36)
Ln(Market Equity)		0.0076		-0.0404**
		(1.02)		(-2.28)
Book-to-Market		0.0293		0.0285
		(1.26)		(0.55)
Lag Adj Return [-270, -21]		-0.0121		-0.0950**
		(-0.79)		(-2.11)
Fraction of C Suite Trades		0.0442		0.1259*
		(1.57)		(1.71)
Constant	0.0148*	-0.0583	0.0923***	0.2478*
	(1.81)	(-1.23)	(4.51)	(2.11)
Adj. *R*-Sqr	0.502	0.580	-0.004	0.054
Observations	363	251	251	188

Table VIII
Predicting 13D Filings

Panel A of the table presents the results of a probit regression, where the dependent variable is a dummy that equals 1 for firms being targeted by activist hedge funds. One-fourth of the sample is comprised of firms targeted with 13D filings. Market leverage ratio is debt divided by the market value of assets. Sales growth is the annual percentage growth in sales revenues, institutional ownership is shares held by institutions divided by number of shares outstanding, and Tobin's *q* is market value of assets divided by book value of assets. Panel B presents regression results where the dependent variable is pre-filing period buying expressed as the number of buys. Lambda is the inverse Mills ratio from the first stage probit regression in Panel A.

Panel A: Predicting Hedge Fund Targets

	Estimate	Chi-Square	Pr > ChiSq
Intercept	-0.644	59.23	<.0001
Ln (Market Equity)	-0.032	5.60	0.02
Market Leverage Ratio	0.099	0.72	0.40
Book-to-Market	0.005	0.05	0.82
Cash/Total Assets	0.026	0.06	0.80
Sales Growth	-0.002	0.03	0.85
Dividend Payout	-0.023	4.51	0.03
R&D/Total Assets	1.034	19.32	<.0001
ROA	0.210	4.78	0.03
Institutional Ownership	0.712	148.88	<.0001
Tobin's *q*	-0.104	38.34	<.0001
Prior 1-Year Return	0.002	0.04	0.84
Pseudo *R*-Sqr	0.0373		
Observations	5,862		

Panel B: Explaining Insider Buying	
Intercept	1.398**
	(2.54)
Ln(Market Equity)	-0.076
	(-1.60)
Leverage Ratio	1.097**
	(2.53)
Book-to-Market	-0.206*
	(-1.88)
Prior 1-Year Return	-0.072
	(-1.56)
Lambda	-0.168
	(-0.44)
Adj. *R*-Sqr	0.0040
Observations	1,531

Table IX
Explaining Insider Buys

The table presents regression results, where the dependent variable is pre-filing period buying expressed as the number of buys. Short-swing dummy is an indicator for whether the firm ever has an investor who engages in a short-swing trade. Late report dummy is an indicator for whether the firm ever has insider trades that are reported late (more than 2 trading days after 2002 and more than 1 month before 2002). Governance Index is the IRRC–Gompers et al. (2003) governance index. *T*-statistics are reported below the coefficients in parentheses. E-Index is the Bebchuk et al (2009) entrenchment index. ***, **, and * denote statistical significance for the 1%, 5%, and 10% levels, respectively.

	I	II	III	IV
Intercept	1.205***	1.020***	-2.256	0.776
	(3.90)	(2.91)	(-1.32)	(1.15)
Ln(Market Equity)	-0.098*	-0.089*	0.112	-0.035
	(-2.09)	(-1.90)	(0.54)	(-0.40)
Leverage Ratio	0.917**	0.949**	-0.528	0.616
	(2.15)	(2.23)	(-0.30)	(0.80)
Book-to-Market	-0.211**	-0.207*	1.177	0.006
	(-1.96)	(-1.92)	(1.58)	(0.02)
Prior 1-Year Return	-0.075	-0.073	-0.882	-0.278
	(-1.60)	(-1.56)	(-1.56)	(-1.25)
Short-swing Dummy	0.390***			
	(2.60)			
Late Report Dummy		0.377*		
		(1.88)		
Governance Index			0.184**	
			(2.02)	
E-Index				-0.013
				(-0.16)
Adj. *R*-Sqr	0.0076	0.0056	0.0238	-0.0050
Observations	1,641	1,641	160	477

Table X
Abnormal Returns Around 13D Filings Classified by Early Communication

The table shows the mean buy and hold abnormal returns (BHARs) for the sample of hedge fund 13D filings, where the filing date is event day $t = 0$. BHARs for both five days ([-2, +2]) and 41 days ([-20, +20]) surrounding the filing date are presented. Abnormal returns are computed as returns net of the CRSP value-weighted market portfolio. Returns are reported separately according to whether management has had discussions with the hedge fund about the activist's plans prior to the 13D filing ("Early Talk"). The discussions are documented in the 13D filing itself.

	All Insiders	No Early Talk	Early Talk	Difference	*t*-stat
N	1521	1151	370		
[-2, +2]	0.0270	0.0238	0.0368	-0.0130	-2.31
[-20, +20]	0.0717	0.0799	0.0461	0.0338	2.43

Table XI
Insider Trading Activity Classified by Early Communication

The table presents the mean net trades and mean number of trades of corporate insiders when the sample is classified according to whether the firm's managers had communication with the hedge fund activist prior to the 13D filing. The reported *t*-stat is for a test of the difference between the sample means with and without early communication. We define net trades as follows. For each 13D filing, we calculate:

$$Net\,Trade\,by\,All\,Insiders^{\,\text{Stock } k} = \sum_{t=-60}^{-1} \sum_{All\ Insiders\ i} (Buy_i - Sell_i)$$

where Buy_i / $Sell_i$ are trades by insider *i* in the window [-60,-1] (*t* = 0 is the 13D filing date), measured as the percentage of total shares outstanding for stock *k*. Panel A only includes insider trades for firms that experienced a positive 13D announcement return, and Panel B only includes insider trades for firms that experienced a negative 13D announcement return. Results are reported separately in each case for insiders who strictly buy, and do not sell.

Panel A: For Positive Announcement Returns

	Net Trade			Number of Trades		
	No Early Talk	Early Talk	*t*-stat	No Early Talk	Early Talk	*t*-stat
All Insider Trades	0.06	-0.76	2.14	-0.54	-0.43	-0.42
N	413	142		413	142	
When Insiders Buy Only	1.83	0.44	3.01	2.24	1.84	1.81
N	127	49		127	49	

Panel B: For Negative Announcement Returns

	Net Trade			Number of Trades		
	No Early Talk	Early Talk	*t*-stat	No Early Talk	Early Talk	*t*-stat
All Insider Trades	-0.06	0.27	-0.56	-0.77	-0.38	-1.22
N	290	104		290	104	
When Insiders Buy Only	2.25	1.69	0.05	1.69	2.09	-1.71
N	98	44		98	44	

Table XII
Profits from Insider Trades Classified by Early Communication

The table presents the profits from insider trades when the sample is classified according to whether the firm's managers had communication with the hedge fund activist prior to the 13D filing. Profits are calculated from the closing price on the date of the trade that is recorded on Form 4 for any opportunistic insider trade falling within [-60, -1] of the 13D filing date. The holding period return is calculated until t+20, where t is the 13D filing date. Panel A presents results where no discussions prior to the 13D filing took place, and Panel B presents results where there were such discussions.

Panel A: No Early Talk Between Hedge Fund and Managers

	Obs	Mean Ret (%)	*p*-value
Sell Only Insiders	939	-2.02	0.013
Buy and Sell Insiders	13	8.41	0.164
Buy Only Insiders	666	14.49	0.000

Panel B: Early Talk Between Hedge Fund and Managers

	Obs	Mean Ret (%)	*p*-value
Sell Only Insiders	347	-1.75	0.145
Buy and Sell Insiders	6	-8.12	0.097
Buy Only Insiders	236	5.33	0.002

Table XIII
Insider Trades and Geographic Proximity

The table presents regression results when the dependent variable is either the size of insider buys or the number of insider buys during the period [-60, -1] leading up to a 13D filing. Geographic Distance is the distance in miles between the zip code of the targeted firm and the zip code of the activist hedge fund. Closeness Indicator takes the value one if the distance between the targeted firm and the activist hedge fund falls within the first quartile. *T*-statistics are reported below the coefficients in parentheses. ***, **, and * denote statistical significance for the 1%, 5%, and 10% levels, respectively.

	Size of Buys	Number of Buys	Size of Buys	Number of Buys
Geographic Distance	-0.0001	0.0001		
	(-0.84)	(0.68)		
Closeness Indicator			0.321**	0.132
			(2.11)	(0.50)
Ln(Market Equity)	-0.129***	-0.217***	-0.121***	-0.208***
	(-3.17)	(-3.06)	(-2.96)	(-2.92)
Leverage	-0.044	1.743***	0.009	1.741***
	(-0.12)	(2.71)	(-0.03)	(2.71)
Book-to-market	-0.169*	-0.341*	-0.164	-0.335*
	(-1.67)	(-1.94)	(-0.16)	(-1.91)
Prior 1-year Return	-0.094	-0.605***	-0.101	-0.611***
	(-0.88)	(-3.24)	(-0.94)	(-3.27)
Lambda	-0.285	-0.093	-0.296	-0.105
	(-0.88)	(-0.17)	(-0.92)	(-0.19)
Constant	1.571***	2.379***	1.384***	2.399***
	(3.33)	(2.89)	(2.93)	(2.92)
Adj. R-sq	0.0072	0.0178	0.0109	0.0176
Observations	989	989	989	989

Table XIV
Insider Trading and Proxy Contests

The table presents the mean net trades and mean number of trades of corporate insiders for firms that have a hedge fund 13D filing and eventually have a proxy contest versus those that do not have a proxy contest. The first row shows results where insiders engage in buying and selling of shares. The second row shows results where insiders only buy shares. The *t*-statistic tests the difference in means between insider trades at firms without a proxy contest and those with a proxy contest. The proxy contest data runs from 2006-2017. We define net trades as follows. For each 13D filing, we calculate:

$$Net\,Trade\,by\,All\,Insiders^{\,\text{Stock } k} = \sum_{t=-60}^{-1} \sum_{All\ Insiders\ i} (Buy_i - Sell_i)$$

where Buy_i / $Sell_i$ are trades by insider *i* in the window [-60,-1] (*t* = 0 is the 13D filing date), measured as the percentage of total shares outstanding for stock *k*.

	Net Trade			Number of Trades		
	No Proxy Contest	Proxy Contest	*t*-stat	No Proxy Contest	Proxy Contest	*t*-stat
All Insider Trades	0.20	-0.29	1.52	-0.68	-0.73	0.18
N	500	96		500	96	
When Insiders Buy Only	2.24	0.71	3.39	2.17	2.03	0.51
N	161	30		161	30	

Appendix A
CEO Turnover and Insider Purchases

The table shows regression results where the dependent variable is an indicator for whether the CEO was replaced within one year or three years after a 13D filing. Insider Net Buy Dummy takes the value 1 if there is a net buy and Insider Net Buy is a continuous variable for the amount purchased. Insider Net Sell Dummy takes the value 1 if there is a net sell and Insider Net Sell is a continuous variable for the amount sold.

	1 Year	3 Years	1 Year	3 Years	1 Year	3 Years
Insider Net Buy Dummy	-0.201	-0.140			-0.196	-0.145
	(-0.72)	(-0.53)			(-0.70)	(-0.55)
Insider Net Buy	0.410	-0.087			0.410	-0.087
	(0.77)	(-0.15)			(0.77)	(-0.15)
Insider Net Sell Dummy			0.199	0.030	0.196	0.026
			(0.86)	(0.12)	(0.84)	(0.10)
Insider Net Sell			0.148	0.221	0.148	0.221
			(0.92)	(1.45)	(0.92)	(1.45)
Ln (Market Equity)	0.097***	0.117***	0.096***	0.117***	0.096***	0.117***
	(3.23)	(3.83)	(3.19)	(3.84)	(3.20)	(3.83)
Book-to-Market	-0.122	-0.075	-0.119	-0.077	-0.119	-0.077
	(-1.33)	(-0.92)	(-1.31)	(-0.95)	(-1.31)	(-0.95)
Constant	-1.209***	-0.333	-1.215***	-0.334	-1.212***	-0.327
	(-5.74)	(-1.60)	(-5.76)	(-1.62)	(-5.75)	(-1.58)
Pseudo R-sq	0.0068	0.0083	0.007	0.0089	0.0072	0.0090
Observations	3757	3757	3757	3757	3757	3757

Appendix B
Poison Pills and Insider Purchases

The table shows regression results where the dependent variable is an indicator for whether a poison pill was adopted at a target firm in the one year or two years following a 13D filing. Insider Total Buys is the amount of stock purchases prior to the 13D filing by the target insiders, and Insider Number of Buys is the total number of prefiling purchases of target insiders.

	Poison Pill Adoption in 1 year		Poison Pill Adoption in 2 years	
Insider Total Buys	<0.0001		<0.0001	
	(-0.02)		(0.01)	
Insider Number of Buys		-0.0004		0.0004
		(-0.25)		(0.31)
Ln (Market Equity)	0.0041	0.0041	0.0015	0.0016
	(1.59)	(1.58)	(0.59)	(0.60)
Market Leverage Ratio	-0.0043	-0.0039	0.008	0.0076
	(-0.18)	(-0.17)	(0.34)	(0.32)
Book-to-Market	-0.0037	-0.0038	-0.0093	-0.0092
	(-0.62)	(-0.64)	(-1.56)	(-1.54)
Prior 1-Year Return	-0.0021	-0.0021	0.0031	0.0031
	(-0.80)	(-0.81)	(1.19)	(1.21)
Constant	0.0097	0.0102	0.0252	0.0247
	(0.57)	(0.60)	(1.50)	(1.46)
Adj. R-sq	0	0.0001	0.0002	0.0002
Observations	1641	1641	1641	1641