

Risk Aversion and Opportunism: Market Uncertainty's Impact on Hedge Fund Activism

Exploring how hedge fund activist campaign objectives,
tactics and success rates are impacted by market uncertainty

Erik Lenander*

Anton Tormod**

Master's Thesis in Finance
Stockholm School of Economics
December 2024

Abstract

We find that activist hedge funds exhibit risk averse behavior in response to rising market uncertainty, as measured by the VIX, while acting opportunistically during firm-specific distress signaled by increasing bond spreads. By analyzing the monthly count of activist campaign engagements, we observe that this behavior persists across campaign objectives and is more prominent during high levels of VIX. When categorizing targets by size, we find that the VIX has the weakest negative impact on engagement counts in micro-cap firms, while bond spreads exert the strongest positive influence compared to other firm sizes. Additionally, whilst we find that market uncertainty does not affect the success rates of different tactics, hedge fund activists exhibit a preference for non-confrontational tactics during periods of high uncertainty. These findings highlight how activists adjust their behavior in response to market conditions, offering valuable insights for stakeholders such as target firms, investors, and hedge funds navigating periods of uncertainty.

Keywords: Hedge fund activism, Market uncertainty, Objectives, Tactics, Success

Supervisor: Mariassunta Giannetti, Professor of Finance, Department of Finance, Stockholm School of Economics

Acknowledgements: We would like to express our gratitude to our supervisor, Mariassunta Gianetti, for her guidance and support throughout the development of this thesis.

* Student number: 24602

** Student number: 42642

Table of Contents

1. Introduction	1
2. Literature Review	5
3. Data Description.....	8
3.1 Sources and Methodology	8
3.2 Critical Analysis of Data Sources.....	8
3.3 Summary Statistics and Descriptive Evidence	9
3.4 Targets of Hedge Fund Activists	13
4. Empirical Results	15
4.1 Activist Engagements and Volatility	15
4.2 Volatility across Campaign Objectives	20
4.3 Campaign Objectives and Volatility Split into Quartiles	24
4.4 Volatility Splits Across Target Size	27
4.5 Volatility and Tactics.....	31
5. Discussion and Further Research	38
6. Conclusion.....	41
7. References	42
8. Appendix	44
Table A1. Definitions of Independent Variables	44
Table A2. Campaign Objectives.....	44
Table A3. Campaign Tactics	45
Table A4. VIX Quartile Split Values	45

1. Introduction

The 2020s have served as a stark reminder of market uncertainty's profound impact on the financial markets, contrasting sharply with the relative calm of the 2010s and revealing just how swiftly global events can reshape financial stability. While market uncertainty poses significant risks for most investors, it can also create opportunities for those willing to act decisively. Among market participants, the level of engagement with target companies could be a crucial factor in determining their approach to risk and opportunity. Activist hedge funds, with their proactive involvement and capacity to influence corporate boards and management, may be uniquely positioned to capitalize on periods of uncertainty, mitigating risks and creating value through active engagement.

This study explores whether activists hedge funds view market uncertainty as an opportunity or if they, instead, reduce engagements to limit risk and potential losses. On the one hand, heightened uncertainty may present more engagement opportunities at favorable valuations. On the other hand, it could also introduce greater risk for activists, making it challenging to secure the necessary support to drive change and potentially impacting their abnormal returns.

To capture this, we analyze the association between market uncertainty and the monthly count of activist hedge fund campaign engagements. We use the VIX, AAA bond spread, CAPE ratio, and value-weighted market return, as proxies for market uncertainty, with a data sample from 2005 to 2023. We further break the analysis down across different activist objectives, levels of VIX, size of the target firms, and the trade-off decision when choosing which tactic to employ.

Our initial findings indicate that a one standard deviation increase in the VIX leads to a 13.43% decrease in the number of engagements, this is a reduction of 1.28 engagements each month. This risk averse behavior of hedge fund activists can be understood from the organizational structure of hedge funds. Being predominantly open-ended, hedge funds face a redemption risk from external investors with underperformance. Such underperformance can be exacerbated in volatile equity markets, leading to a greater risk of redemption. Additionally, unlike other institutional investors, hedge funds have a greater financial incentive, with the performance of the fund being highly correlated with the pay for the hedge fund manager and success for the hedge fund. Thus, the optimization of risk-adjusted returns is paramount.

We also identify bond spreads as a significant predictor of activist engagements, with a one-standard-deviation increase associated with a rise of 1.11 in campaign counts, or a 13.23% increase. Rising bond spreads increase financial pressure on companies by raising borrowing costs, which activists may perceive as opportunities for intervention. Widening bond spreads often signal company-specific financial distress, which can make managers and institutional investors in distressed firms more receptive to activist-led changes aimed at stabilizing or improving the company's financial health.

The VIX and bond spreads appear to influence activist campaigns in opposite directions due to their differing nature. Elevated VIX levels indicate systemic market volatility and broader economic uncertainty, leading to unpredictable stock prices, which deter activist engagement due to risk aversion. In contrast, widening bond spreads highlight company-specific issues rather than market-wide instability, presenting conditions that activists see as opportunities for engagement and potential value creation.

We further investigate whether the relationship between activist engagements and market uncertainty holds across the different objectives pursued by hedge fund activists. It could be the case that activists adopt different stances, opportunistic or risk-averse, depending on their campaign goals. For example, they might leverage uncertain markets to pursue takeovers at lower valuations while exercising caution for objectives requiring stable conditions. Our findings indicate that, overall, activists maintain a consistent approach to market uncertainty across objectives, suggesting they do not adjust their stance based on specific goals. However, an exception arises with engage management objectives, where bond spreads have a stronger impact than the VIX compared to other objectives. This may be because engage management campaigns focus on issues like undervalued stock or maximizing shareholder value through active dialogue with management, making company-specific financial health more relevant than overall market volatility. In contrast, other objectives may involve high-risk structural changes where systemic market conditions play a larger role. These insights enhance our understanding of how activists tailor their strategies in response to different facets of market uncertainty.

Building on the evidence that hedge fund activists exhibit risk averse behavior, we explore two extensions to our findings. First, we hypothesize that quartiles of high VIX will have a greater impact on the number of engagements. We find that periods in the 4th and 3rd quartile of VIX show a 25.90% and 10.62% decrease in engagements, respectively, when compared with the 1st quartile of VIX. This evidence supports the notion that hedge fund activists are risk averse, and actively avoid volatile stock market periods.

Second, we hypothesize that the market capitalization of the target firm influences activist targeting during periods of heightened uncertainty. Specifically, we predict that engagements will decrease as the target firm's market capitalization increases under conditions of heightened uncertainty. Hedge fund activists tend to acquire a 5-15% ownership stake, thus as the size of the target firm increases the capital required increases as well (Greenwood and Schor, 2008; Brav et al., 2008; and Boyson and Mooradian, 2011). Furthermore, larger firms have stronger corporate defense which increases the cost of executing a campaign. Our results indicate that inflation adjusted large- and mid- capitalization firms have a 40% decrease in the number of engagements in the fourth quartile of VIX compared to the first quartile. Quantifiably this is a decrease of 1.36 engagements each month. Furthermore, we see that the impact on micro capitalization firms is lower (<\$250 market capitalization), with only a 20% reduction, which translates to a 0.61 decrease in the number of engagements.

Having explored how market uncertainty influences when hedge fund activists choose to engage, we now shift our focus to what happens after they have decided to engage. Specifically, we are interested in understanding the tactics activists employ. On the one hand, activists might choose to engage aggressively during periods of high uncertainty because swift and decisive actions may be necessary to address critical challenges facing the firm. On the other hand, they may avoid aggressive tactics, as such approaches could amplify risks in an already volatile market environment.

Our results show that activists are more likely to employ non-confrontational tactics when market uncertainty increases. Specifically, a one-standard-deviation increase in the VIX raises the probability of a non-confrontational tactic by 4.35%, while the same increase in the bond spread leads to a 7.41% increase. This suggests that hedge fund activists aim to avoid compounding risk in their engagements as market uncertainty rises. This behavior can also be explained by the distinct cost profile faced by hedge fund activists, as more confrontational tactics involve higher costs and yield lower gross abnormal returns (Gantchev, 2013). Given the importance of maximizing risk-adjusted returns, hedge fund activists are more likely to use less confrontational tactics during periods of market uncertainty to achieve their objectives.

However, the interpretation of these results faces challenges. First, specific firm characteristics may influence the choice of tactic employed by a hedge fund activist. For instance, distressed firms may be more susceptible to activist influence and therefore are more likely to cooperate with non-confrontational engagements. To test this, we control for a firm's market capitalization, leverage and profitability as indicators of a firm's distress level. Whilst

we find significance in the market capitalization for non-confrontational tactics, the broader lack of statistical significance in the firm's characteristics implies that hedge funds do not target tactics to specific firms based on their financials.

Second, tactics might have different rates of success in implementing the proposal across market conditions. Thus, the preference for non-confrontational tactics could be due to an increase in the success rate. However, we find no significance in the influence of market uncertainty on the underlying success rates for the different tactics. These tests substantiate that market uncertainty has a real impact on the trade-off conundrum when deciding which tactic to employ. Ultimately, when an activist has decided to engage, we find that hedge funds prefer less risky and less costly tactics in periods of higher market uncertainty.

The results in this paper suggest that activists exhibit risk-averse behavior in relation to the VIX but act opportunistically in the face of rising bond spreads. Additionally, once they decide to engage, activists are more likely to employ non-confrontational tactics during uncertain times to avoid compounding risks and to maximize risk-adjusted returns. These findings are relevant to various stakeholders, including target firms, hedge fund activists and other shareholders, as they enhance the understanding of activist behavior.

2. Literature Review

Hedge fund activist campaigns have been extensively studied in prior literature, focusing on their objectives, tactics, success rates, firm performance and returns. Brav et al. (2008) provided a foundational overview, showing that hedge funds typically propose strategic, operational, and financial changes. They find that most engagements are non-confrontational and achieve full or partial success in approximately two-thirds of cases, with target firms experiencing an increase in operating performance following the campaign.

Furthermore, it has been seen that hedge fund activists typically acquire relatively small ownerships in the target company, Brav et al. (2008) report a median ownership of 6.3%, while Boyson and Mooradian (2011) report a mean ownership of 8.83%. Hedge fund activists are not short-term investors, Brav et al. (2008) reports a median ownership period of 1 year, while Gantchev (2013) finds a mean ownership period of 15 months. Brav et al. (2008) and Gantchev (2013), continue to find that hedge fund activists target firms that are profitable, are smaller in size and have high institutional ownership, preferring sophisticated investors. In addition, Appel, Gormley and Keim (2019) demonstrate that higher passive institutional ownership influences activist campaigns by prompting activists to pursue more ambitious objectives like board representation, employ confrontational tactics such as proxy fights, and achieve greater success in governance-related outcomes.

Compared with other institutional investors, hedge fund activist campaigns result in greater abnormal returns following the announcement date and are persistent in the following year (Brav et al., 2008; Boyson and Mooradian, 2011). Extending this analysis to an international context, Becht et al. (2017) find that campaigns with multiple objectives, such as pursuing a board change with a takeover, yield significantly higher total returns compared to campaigns with single objectives.

Among the various objectives pursued by hedge fund activists, takeovers are particularly significant and have been the focus of much research. Greenwood and Schor (2009) and Boyson, Gantchev and Shivdasani (2017) show that hedge fund activism creates shareholder value by increasing the likelihood of target firms being taken over, rather than from target undervaluation or bidder overpayment. Corum and Levit (2019) further contribute to this literature by showing that activists have an inherent advantage over bidders in pressuring entrenched incumbents to sell, as they avoid conflicts of interest with target shareholders. This advantage leads to greater success in proxy fights and often results in the target's sale to third

parties. Moreover, Burkart and Lee (2022) find that activism is most effective when it leads to governance reforms that facilitate takeovers.

To achieve their objectives and influence corporate decisions, activists employ various tactics. Denes, Karpoff, and McWilliams (2017) review 73 studies on shareholder activism, finding that democratic tactics like shareholder proposals generally have minimal impact, while more concentrated and "undemocratic" approaches, such as proxy fights, significantly improve firm value. Their analysis highlights that activism with large block holdings is more effective in driving value and performance improvements. Levit (2019) shows that the threat of a public campaign strengthens private negotiations between activists and boards, making activism more effective, while public communications are typically ineffective due to credibility concerns. Bebchuk et al. (2020) focus on settlements between activists and target boards, noting that settlements are more likely when activists pose a credible threat of winning a proxy fight. Such settlements typically lead to positive stock price reactions and improvements in firm performance, emphasizing the strategic importance of negotiation tactics. Additionally, previous literature has found that confrontational tactics result in greater abnormal returns compared with other tactics (Brav et al., 2008; Brav et al., 2015; Krishnan et al., 2016). However, Gantchev (2013) analyzes the costs associated with the different tactics and concludes more confrontational tactics have increased costs, diminishing the abnormal returns generated.

Hedge fund activists generally have high success rates in achieving their objectives. Bratton (2007), Brav et al. (2008), and Klein and Zur (2009) report full or partial success rates between 60% and 84% for activist hedge funds. Boyson and Mooradian (2011) indicate that hedge fund activists succeed in increasing board size, obtaining board representation, and promoting mergers in most targets. Furthermore, Becht et al. (2017) show that ownership structures and institutional settings significantly impact success rates.

Despite the extensive research on hedge fund activism's objectives, tactics, and success, the relationship between market uncertainty and hedge fund activism has been largely overlooked, creating an opportunity for further exploration that this paper aims to address. Greenwood and Schor (2009) briefly highlight the potential impact of macroeconomic conditions on activist investors, showing that their portfolios performed poorly during a period of declining market-wide takeover interest.

While the impact of macroeconomic factors on hedge fund activism remains largely underexplored, several studies have examined how macroeconomic uncertainty affects fund performance and other financial activities. Bali, Brown and Caglayan (2014) find that

hedge fund returns, unlike mutual fund returns, are significantly impacted by exposure to macroeconomic risk. They use uncertainty betas derived from time-varying macroeconomic variables like default spreads and GDP growth to demonstrate how macroeconomic uncertainty drives cross-sectional differences in hedge fund performance. In contrast, Ben-Rephael, Choi and Goldstein (2021) investigate macroeconomic factors in the opposite direction, showing that shifts towards high-yield bond mutual fund flows serve as an early indicator of credit booms, predicting key credit cycle indicators and macroeconomic trends.

Moreover, market uncertainty's impact has been studied in other areas, such as merger and acquisition activity. Bhagwat, Dam and Harford (2016) demonstrate that increases in market volatility significantly reduces merger activity, with the effect being strongest when volatility is highest and for larger targets. They further find that firm and industry-level uncertainty measures reveal similar findings. Bonaime, Gulen and Ion (2018) reveal that political and regulatory uncertainty dampens mergers, especially in deals involving tax, government spending, or monetary policy issues, shifting bargaining power towards target firms. Additionally, Betton, Meslmani and Switzer (2022) find that volatility of implied volatility influences key aspects of M&A deals, including announcement returns and payment methods.

Given the lack of research on how market uncertainty affects hedge fund activism and considering the significant effects of uncertainty on other financial activities, this paper seeks to fill this gap by examining the relationship between market uncertainty and hedge fund activism. Understanding this relationship is crucial, as it can provide insights into how activists may alter their strategies in response to changing economic conditions and how market uncertainty can influence the effectiveness of activist campaigns.

3. Data Description

3.1 Sources and Methodology

Data on hedge fund activist campaigns was sourced from S&P Capital IQ's Transaction Screening on investor activism. The dataset spans from 2005 to 2023 and is filtered by the activist launch date, defined as the point when an activist investor initiates their campaign. The sample is restricted to U.S. listed firms and only includes campaigns involving hedge funds as the activist investor. In total, the dataset comprises 2,030 hedge fund activist campaigns, which is consistent with the magnitude reported in previous studies. Target data is furthermore sourced from Capital IQ, where market capitalization is inflation adjusted using CPI. Since our objective is to link hedge fund activism to market uncertainty, we follow the methodology of Bhagwat, Dam, and Harford (2016) and utilize the VIX, bond spread, CAPE and VWRET as proxies for uncertainty. For the VIX, we utilize data from the Chicago Board Options Exchange (CBOE) and use the closing price of the VIX on the last day of each month to measure market expectations of volatility for the subsequent month. The VIX is utilized as proxy for overall market uncertainty. The bond spreads are calculated as the difference between the monthly corporate bond yield, pulled from Moody's Seasoned AAA yield, and the Federal Funds rate retrieved from FEDFUNDS. To measure price levels, the Robert Shiller's Cyclically Adjusted Price Earnings Ratio (CAPE) is used and sourced from Robert Shiller's website. It is defined as the current inflation-adjusted price level of the S&P 500, divided by the simple average of the last ten year's inflation-adjusted earnings of the S&P 500. VWRET is obtained from Wharton CRSP and is defined as monthly return on the value-weighted stock market excluding dividends, which subsequently is used to calculate firm level volatility.

These market proxies are used because they effectively capture different dimensions of market risk and uncertainty. The VIX directly measures investor sentiment about future market volatility, while the bond spread reflects credit market conditions and the cost of borrowing. The CAPE ratio offers insight into market valuations over long-term earnings trends, and VWRET measures overall market returns, providing a broad perspective on market performance.

3.2 Critical Analysis of Data Sources

Previous literature has commonly constructed a data sample by manually collecting hedge fund activist data from 13D Edgar filings, but we use a secondary data sample to construct our data

sample through Capital IQ. This decision was driven by the convenience and speed which the platform offers. A potential issue arises from Capital IQ aggregating data from various sources, which could lead to inaccuracies and inconsistencies when compared with the original 13D Edgar filings. As an aggregated database, inaccuracies could arise in the classification of the objectives pursued and the specific tactic utilized by the hedge fund activist, due to the automated data collection process. Despite these potential inaccuracies, the impact on our analysis should be limited. Our research paper primarily focuses on the count of engagements and a consolidated tactic classification by hedge fund activists, rather than specific nuances in each engagement, thus the room for error is limited.

3.3 Summary Statistics and Descriptive Evidence

Panel A of Table 1 presents data on the total number of hedge fund engagements and the number of objectives initiated between 2005 and 2023. The data reveals that hedge fund activists frequently pursue single objectives, with single target engagements comprising 71% of all proposals. In contrast, multi-objective engagements, where activists target multiple goals within a single proposal, account for 29% of the total engagements. This demonstrates a clear preference for focused strategies in activist campaigns.

Panel B of Table 1 summarizes the objectives pursued by hedge fund activists. These engagements are not mutually exclusive, as activists target multiple objectives within a single proposal. Each hedge fund activist filing includes the stated purpose of the transaction, where the activist investor details plans or proposals that could lead to changes at the target company. We extend the classification framework of objectives that was developed by Brav et al. (2008) by adding a sixth metric: block merger. We define a block merger as when a hedge fund activist seeks to block an acquisition to be made by the target company, a merger with a third party or an acquisition of the target firm by a third party. Thus, the objectives are categorized into six groups: corporate governance, engage management, business strategy, recapitalization, block merger, and takeover or propose sale. In our sample, corporate governance emerges as the predominant objective, accounting for 46.0% of all stated objectives.

Panel C of Table 1 summarizes the tactics employed by activist hedge funds and the success rates of these engagements within our sample. We categorize the tactics into three distinct groups determined on the hostility of the proposal with a similar classification to Brav et al. (2008). The first category, non-confrontational tactics, includes non-confrontational communication, non-confrontational requests for board representation and the filing of a formal shareholder proposal, accounting for 44.1% of all tactics. The second category, moderate

tactics, includes threats to file a lawsuit or threats to initiate a proxy fight, accounting for 31.6% of all tactics. The third category, confrontational tactics, includes legal proceedings, takeover bids or proxy fights, accounting for 24.3% of all tactics. We classify an engagement as successful if the activist achieves its stated objective, partially successful if a settlement is reached between the activist and the target company, nominally successful if the activist either achieves its objective or achieves partial success, and unsuccessful if the activist fails to meet its objective. Over the sample period, the nominal success rate was 54.7%, slightly lower than previous studies, which reported success rates closer to 60% (Brav et al. 2008).

Panel D of Table 1 presents summary statistics for the key variables utilized in our analysis. Our sample is aggregated at the monthly level, revealing an average of 8.90 activist engagements per month from 2005 to 2023. Additionally, we include our market control variables employed in the regressions, which are the VIX, value-weighted market return, PE ratio, and the AAA-Fed funds spread.

Panel E of Table 1 displays a correlation matrix for the key variables used in our analysis. Overall, the correlations among our independent variables are low.

Table 1
Descriptive statistics

Panel A: Summary statistics of events per year

Outcome year	No. of Engagements	Single Engagements	Multiple + Takeover	Multiple + Other
2005	56	24	8	24
2006	68	43	12	13
2007	57	29	9	19
2008	76	50	13	13
2009	54	38	4	12
2010	83	52	11	20
2011	110	85	7	18
2012	123	88	14	21
2013	152	101	25	26
2014	184	140	13	31
2015	164	123	13	28
2016	144	111	11	22
2017	106	81	11	14
2018	142	112	17	13
2019	151	112	8	31
2020	101	68	9	24
2021	87	59	11	17
2022	98	75	3	20
2023	74	48	6	20
Total	2,030	1,439	205	386
% of Total	100%	70.9%	10.1%	19.0%

Panel B: Summary statistics of engagements objective

Event type	No. of objectives	% of all events
Corporate Governance	1,255	46.0%
Engage Management	629	23.0%
Takeover or Propose Sale	306	11.2%
Business Strategy	290	10.6%
Block Merger	150	5.5%
Recapitalization	99	3.6%
Total	2,729	

Panel C: Summary statistics of hedge fund tactics and success rates

Event type	No. of event	% of all events
Tactics		
Confrontational	493	24.3%
Moderate	642	31.6%
Non-confrontational	895	44.1%
Success Rates		
Announced	16	
Successful	428	21.3%
Partial success	674	33.5%
Nominal success	1,102	54.7%
Unsuccessful	912	45.3%

Panel D: Summary statistics of time-series variables

Variable	Mean	SD	25th Percentile	75th Percentile
No. of Engagements	8.90	4.76	5.00	12.00
VIX	19.51	8.40	13.59	23.39
AAA-3 mo. Spread	2.81%	1.53%	1.70%	3.90%
PE Ratio	26.25	4.88	22.97	29.25
Value Weighted Mkt. Return	0.68%	4.34%	-1.71%	3.22%

Panel E: Correlation matrix

Variable	VIX	AAA-3 mo. Spread	PE Ratio	Value-wgt mkt. Return
VIX	1			
AAA-3 mo. Spread	0.3317	1		
PE Ratio	-0.3491	-0.5643	1	
Value-wgt mkt. Return	-0.3131	-0.053	0.1655	1

Table 1 reports the descriptive statistics for our data sample which includes 2,030 total events. Panel A reports the total number of hedge fund activist campaigns, categorized as either single or multiple objective campaigns (Mutually exclusive). A campaign is classified as multiple + takeover if the hedge fund activists' stated objective includes a takeover and another objective. Panel B reports the summary of events listed by the hedge fund activists' stated objective, importantly here the objectives are not mutually exclusive. Panel C reports the tactics employed by the hedge fund activist, categorized by the level of hostility, and includes the aggregate success rate for each engagement. Panel D provides monthly summary statistics from 2005 to 2023 for the number of engagements and the independent variables used in subsequent time-series regressions. Panel E presents the correlation matrix for the independent variables used in the time-series regressions.

3.4 Targets of Hedge Fund Activists

Brav et al. (2008) established that hedge fund activists typically target firms that are undervalued, more profitable and exhibit higher leverage. However, these findings are based on a data sample from years prior to our analysis, specifically this study investigated engagements from the period 2000 to 2006. Therefore, to explore whether hedge fund activists have adjusted their target philosophy, we employ a similar methodological framework to Brav et al. (2008), for our sample period of 2005 to 2023.

In Table 3 we report the average difference of target firm characteristics to their matched sample. Firm characteristics are based on the one-year before engagement financial reports. The average difference is calculated by first matching target companies to a defined set of peers. The peer group is sourced from CRSP/Compustat's merged data set. During the period 2004 to 2023 we have a sample of 77,653 distinct publicly traded firm years. However, when merging data sources between our target firms and CRSP/Compustat's publicly traded firms, we are left with 1,483 distinct observations in our data sample, down from 2,030. We create a strict peer group through a matched set of firms based on the criteria of being in the same 10x10 Fama & French size and book-to-market sorted portfolios, same financial year and same SIC 2-digit industry. If a match for the strict peer group was not feasible, we relax the requirements to a 5x5 Fama & French size and book-to-market sorted portfolio, same financial year and a SIC 1-digit industry. For each target firm i , we calculate the difference relative to their matched peer group as follows:

$$Diff_i = X_i - \frac{1}{m} \sum_{j=1}^m X_j , \quad (1)$$

Where X is defined as the firm characteristic variable, and firms $j=1, \dots, m$ are from the matched peer group for the target firm. In column (1) of table 3, we report the average difference for each firm characteristic across our target sample calculated as:

$$\frac{1}{n} \sum_{i=1}^n Diff_i , \quad (2)$$

Where $i=1, \dots, n$ is for the target firms in our sample. To analyze whether the difference in firm characteristics vary across different levels of volatility, we assign a dummy variable for each

engagement based on the VIX quartile determined by the closing value of VIX from the previous month. The cut-off values for our data sample's VIX quartiles are shown in appendix Table A4. For columns (2) to (5) we calculate the average difference within each quartile (Q) as:

$$\frac{1}{n_Q} \sum_{i=1}^{n_Q} Diff_i, \quad (3)$$

where n_Q is the number of target firms in quartile Q of VIX, with Q = 1, 2, 3, 4.

Our findings in Table 2 column (1) corroborate the results of Brav et al. (2008) and Gantchev (2013), indicating that hedge fund activists still target firms that exhibit value-investing traits. Furthermore, we see that engagements across different levels of VIX have marginal fluctuations but are relatively indifferent. The only difference we see is that our sample target firms have a lower leverage ratio compared with previous studies (Brav et al., 2008; Gantchev, 2013), apart from firms that are targeted in the worst quartiles of VIX exhibiting a 6.3% increase in leverage compared with matched peers.

Table 2
Characteristics of target companies

	(1)	(2)	(3)	(4)	(5)
	Avg.diff	Avg. diff based on VIX quartile			
Firm Characteristic	Total	Q1	Q2	Q3	Q4
BM	0.0604	-0.0481	0.1733	0.0335	0.0767
ROA	0.0185	0.0114	0.0191	0.0314	0.0109
CF	0.0166	0.0151	0.0239	0.0233	0.0034
LEV	-0.1224	-0.5587	0.0547	-0.0724	0.0626
CASH	-0.0268	-0.0202	-0.0462	-0.0143	-0.0262
PAYOUT	-0.0380	0.2205	-0.2945	-0.0458	-0.0125
RND	-0.0064	-0.0027	-0.0069	-0.0176	0.0024
Number of Observations	1,483	354	380	386	363

This table reports the characteristics of the target firms when compared with a set of matched peers. The first column reports the average difference of all target firms when matched with its peers. When calculating the difference in BM the BM matching is dropped in the Fama French criterion. Columns (2) to (5) report the average difference for firms that were engaged in each quartile of VIX. All firm characteristic variables are collected from the year before engagement. BM is calculated as (book value of equity/market value of equity); ROA is calculated as (EBITDA/assets); CF is calculated as (net income + depreciation and amortization)/assets; CASH is calculated as (cash + equivalents)/assets; LEV is calculated as debt/(debt+book value of equity); PAYOUT is calculated as (total dividends/net income); RND is calculated as (R&D expense)/assets.

4. Empirical Results

4.1 Activist Engagements and Volatility

Table 3 presents results from a Negative Binomial Model analyzing the effect of market uncertainty on the monthly count of activist campaign engagements. We use a Negative Binomial Model as our dependent variable is in count form and exhibits overdispersion (variance > mean). To account for potential temporal effects, the independent variables are lagged by one month. Panel A presents the coefficients from the regression and are defined as the effect of a one unit increase in each predictor on the log of expected campaign counts. To enhance interpretability, Panel B reports the average marginal effects (AMEs), reflecting the average change in campaign counts for a one-standard-deviation increase in each independent variable. Panel C displays standardized incidence rate ratios (IRRs), indicating the expected percentage change in campaign counts for a one-standard-deviation increase in each predictor, relative to the baseline expected count derived from the model's intercept. As detailed in Table 1 Panel D, one standard deviation of the VIX equals 8.40 units, and 153 basis points for the bond spread. Column (1) isolates the effect of the VIX on the total activist campaigns in our data sample, while column (2) introduces additional financial controls, including bond spread, PE ratio and value weighted market return, to capture broader market conditions, with the regression formula for column (2) defined as:

$$Engagements_t = \exp(\beta_0 + \beta_1 VIX_{t-1} + \beta_2 bond\ spread_{t-1} + \beta_3 CAPE_{t-1} + \beta_4 VWRET_{t-1}) + \epsilon_t \quad (4)$$

For column (3) we include time-specific controls with a time trend variable and monthly fixed effects, alongside a lagged dependent variable and robust standard errors to address potential heteroskedasticity and autocorrelation in our regression results.

In column (1) of Panel A, a one-unit increase in the VIX is associated with a 0.01 decrease in the log of the expected count of activist campaigns in the following month, significant at the 5% level. In standardized terms, column (1) Panel B translates this to an average decrease of 0.89 campaigns in the subsequent month for a one-standard-deviation increase in the VIX, corresponding to a 9.50% reduction in the expected count as shown in Panel C. These findings suggest that activists may defer engagements during periods of heightened market uncertainty. However, the low pseudo R-squared of 0.01 indicates that

market volatility alone explains only a small portion of the variance in activist behavior, pointing to the importance of other influential factors.

Table 3
Market uncertainties influence on hedge fund activism engagements

	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	<i>A. Regression Results</i>			<i>B. Average Marginal Effects</i>			<i>C. Standardized IRR's</i>		
VIX	-0.01** (0.00)	-0.01*** (0.00)	-0.02*** (0.00)	-0.89	-1.12	-1.28	-9.50%	-11.80%	-13.43%
Bond spread		0.13*** (0.03)	0.08*** (0.03)	--	1.80	1.11	--	22.37%	13.23%
PE ratio		0.03*** (0.01)	-0.01 (0.01)	--	1.25	-0.41	--	15.01%	-4.50%
Mkt return		-0.01 (0.01)	-0.01 (0.01)	--	-0.38	-0.24	--	-4.23%	-2.64%
Constant	2.41*** (0.09)	1.35*** (0.29)	1.92*** (0.30)	--	--	--	--	--	--
Observations	228	228	228	228	228	228	228	228	228
Pseudo R-squared	0.01	0.02	0.09	0.01	0.02	0.09	0.01	0.02	0.09
Month FE	No	No	Yes	No	No	Yes	No	No	Yes
Time series variable	No	No	Yes	No	No	Yes	No	No	Yes
Lagged dependent variable	No	No	Yes	No	No	Yes	No	No	Yes
SE Cluster	None	None	Month	None	None	Month	None	None	Month

This table reports the results of a Negative Binomial Regression whereby the dependent variable is the count of hedge fund activist engagements per month. Panel A displays the results from the regression. In Panel B we calculate the Average Marginal Effects (AME) adjusted to the standard deviations of the respective independent variable. For example, the value of AME in Panel B for bond spread in column (2) indicates the average change in the absolute count of total engagements for a one standard deviation increase in bond spread. In Panel C we illustrate the standardized Incidence Rate Ratios (IRRs), which demonstrate the proportionate change in the count of the dependent variable. Each panel includes three columns corresponding to different model specifications—Column (1) includes only the VIX as the independent variable, and Column (2) adds the market control variables. Column (3) includes an indicator variable for each month, a time trend variable, and a lagged dependent variable to account for temporal dependencies and autocorrelation. Standard errors are robust in column (3). For all columns, the independent variables are lagged by one month. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

In column (2), when adding market controls the VIX's significance level increases to 1% and the magnitude becomes more negative, underscoring the robustness of its effect. Column (3), the most comprehensive model, further improves explanatory power, with the pseudo R-squared rising to 0.09. In this model, a one-standard-deviation increase in the VIX corresponds to a decrease of 1.28 campaigns, and the standardized IRR reflects a 13.43% reduction in expected campaign counts, both significant at the 1% level.

Our empirical results in Table 3 indicate that activists become more conservative with elevated uncertainty, a behavior explained by several factors. High VIX levels lead to unpredictable stock prices, complicating the acquisition of meaningful stakes in target companies. Price fluctuations can disrupt purchasing strategies, as if activists cannot accumulate sufficient shares they may struggle to achieve their objectives, limiting their ability to drive company improvements and realize value. Additionally, in times of high uncertainty,

activists face an increased risk of overpaying for shares, which can impair returns or even prevent them from reaching break-even points.

The observed risk aversion we see from hedge fund activists stems from the difference in their organizational structure compared with other institutional investors. While Brav et al. (2008) concluded that the different organizational structure and incentives of hedge funds allow for more effective activism, we determine that this organizational structure may also hinder their engagements in times of market uncertainty. Hedge funds are primarily open-ended funds that operate in a competitive market with other hedge funds, meaning the risk of redemption from investors is higher. Additionally, Giannetti and Kahraman (2018) find that an open-ended organizational structure limits a fund managers incentive for attacking long-term mispricing. Furthermore, hedge fund managers are highly incentivized, with their compensation being tied to the performance of the hedge fund. During periods of heightened uncertainty, the risk of underperformance relative to peers and benchmark indices increases, which can lead to an increase in redemption from investors, impacting the survivability of the hedge fund. Ultimately, the organizational structure and incentive driven factors contribute to an explanation of the decrease in activist engagements with market uncertainty.

Moreover, heightened uncertainty can reduce support from target firms' management and institutional investors, as activist interventions may cause firm instability. In volatile markets, management teams typically prioritize stabilizing operations and may view activist-driven changes, such as restructuring or strategic shifts, as additional risks. Institutional investors, including pension funds, mutual funds, and large asset managers, often prioritize portfolio stability and may see activist campaigns as too disruptive under uncertain conditions. These investors prefer consistency and may withhold support from activist initiatives, focusing on long-term stability over short-term gains. Previous literature has found that hedge fund activists target companies with higher institutional ownership and often acquire an ownership share between 5-15% (Brav et al. 2008). Thus, without the support of more sophisticated institutional shareholders, the outcome of the objective becomes more uncertain.

These heightened risks increase the likelihood of campaign failure and lower expected returns, thus due to the organizational structure of hedge funds leads to activists delaying new engagements, as evidenced by our results in Table 3. This cautious approach is supported by real options theory, which suggests that high uncertainty raises the value of waiting, encouraging activists to hold off on new campaigns until conditions stabilize.

During periods of elevated VIX, activists may prioritize stabilizing and optimizing existing investments over pursuing new targets. By focusing on their current

portfolio, they can better manage risks without the added exposure of uncertain new campaigns. Furthermore, hedge fund activists depend heavily on their reputation and track record for future performance. Failed campaigns in volatile times can be detrimental, impacting both their credibility and future fundraising efforts. This phenomenon is evidenced by Krishan, Partnoy and Thomas (2016) who found that the abnormal returns in hedge fund activism are not driven by the number of campaigns, but rather the “clout” and “expertise” of the hedge fund activist. As a result, hedge fund activists may concentrate on current holdings and avoid new campaigns during periods of heightened volatility, to protect their reputation and track record.

In columns (2) and (3), the bond spread emerges as another significant predictor, with a one-standard-deviation increase resulting in a 1.11 increase in campaign counts, or a 13.23% increase from the expected count the following month. The results are significant at the 1% level. This suggests that rising borrowing costs, as indicated by widening bond spreads, create an environment where activists become more active.

Higher bond spreads reflect increased financial pressure on companies, signaling that firms face higher borrowing costs and potential financial strain. Activists may perceive these firms as vulnerable and more receptive to strategic changes, providing opportunities to influence corporate decisions and unlock shareholder value. Financially pressured companies are often more open to restructuring initiatives, cost-cutting measures, or capital structure adjustments proposed by activists to address their financial issues.

Additionally, institutional investors might be more supportive of activist interventions during such times, hoping to stabilize or improve the company's financial health. Activists can leverage this support to advocate for changes that may not be as readily accepted during stable periods. Therefore, widening bond spreads present activists with attractive, company specific opportunities for value creation, which contrasts with the decrease in campaigns observed during periods of high market volatility indicated by the VIX.

The VIX and bond spreads influence activist campaigns in opposite directions due to their distinct characteristics. Elevated VIX levels reflect systemic market volatility and uncertainty, leading to unpredictable stock prices and challenging valuations. This environment increases the risk of campaign failure and often results in stakeholder resistance, as both management and institutional investors prefer stability over additional uncertainty. Consequently, activists reduce their engagements during such periods to avoid heightened risks and protect their track records.

In contrast, widening bond spreads signal company-specific financial distress rather than broader market turmoil. These spreads indicate that certain firms face increased

borrowing costs and potential financial strain, making them more vulnerable and open to activist intervention. Activists perceive these companies as opportunities to enact strategic changes that can improve financial health and unlock shareholder value. The risks are more manageable because they are specific to individual firms, and the potential rewards are significant. Stakeholders may also be more receptive to activist proposals aimed at alleviating financial pressures. Thus, activists increase their campaigns when bond spreads widen, capitalizing on the chance to influence companies in need of change.

The results in Table 3 should be interpreted with consideration of limitations inherent in the data and the fitted regression model. The Negative Binomial model, suitable for over dispersed data (where variance exceeds the mean), can be sensitive to outliers, where unusually high or low counts may disproportionately influence the coefficients and dispersion, potentially skewing results. Additionally, while IRRs offer intuitive information on percentage changes, they assume a multiplicative effect on the baseline count, which may not always align with real world interpretations, particularly with standardized IRRs.

Another limitation of the table is that aggregating all activist campaigns may obscure different activist objectives and strategies. Some campaigns may seek to capitalize on increased market uncertainty for profit, while others depend on market stability to drive change. To address these differences, we explore separate Negative Binomial regressions for six different activist campaign objectives below.

4.2 Volatility across Campaign Objectives

To examine whether the direction and significance of the VIX and bond spread effects persist across different activist objectives, Table 4 reports the results of a Negative Binomial regression using a similar method as formula (4) in Table 3. However, the dependent variable is now the different objectives pursued by hedge fund activists. Column (1) isolates the effect of VIX, column (2) adds market controls, and column (3) includes further controls for robustness, with all independent variables lagged by one month. Each panel displays results for a distinct campaign objective, which are not mutually exclusive as a single campaign can have multiple objectives. The standardized IRRs are reported below the regression results in Table 4.

From Table 4, we observe that the direction and significance of the VIX and bond spread effects remain consistent across most campaign objectives, with exceptions in column (3) of the corporate governance panel and all columns of business strategy in Panel C. Within each objective's column (3), a comparison of the standardized IRRs for the VIX and bond spread reveals that their magnitudes are generally of a similar scale but in opposite directions. An exception is found in engage management, where the bond spread has more than twice the impact on campaign count compared with the VIX.

The direction and significance of the VIX's impact suggests that, overall, activists maintain a similar approach to market uncertainty across different objectives, despite the different mechanisms behind the individual objectives. This implies that activist investors do not view increased market uncertainty as an opportunity which they incorporate into standard activist strategies and objectives. Instead, market uncertainty acts as a deterrent to initiating campaigns. The positive consistency of the bond spread suggests on the other hand that activists use the high borrowing costs environments to implement their objectives across all objectives.

Business strategy is the only objective that appears unaffected by changes in the VIX and bond spread. This distinction may stem from the unique nature of business strategy objectives compared to other activist campaigns. Objectives like corporate governance, recapitalization, and takeover or propose sale inherently involve higher-risk structural changes that can destabilize a company in volatile times. When market volatility is high, the added uncertainty makes it less appealing for activists to pursue these campaigns, as they may compound existing risks, directly impacting the firm's financial stability, market valuation or possible return for the hedge fund activist. In contrast, business strategy campaigns focus on long-term improvements in operational efficiency or competitive positioning, which are less sensitive to temporary market conditions and more influenced by firm-specific fundamentals.

Table 4
Market uncertainty and hedge fund activist campaign objectives

	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	<i>A. Corporate Governance</i>			<i>B. Engage Management</i>			<i>C. Business Strategy</i>			<i>D. Recapitalization</i>			<i>E. Block Merger</i>			<i>F. Takeover or Propose Sale</i>		
VIX	-0.01** (0.00)	-0.01*** (0.01)	-0.02*** (0.01)	-0.01 (0.01)	-0.01* (0.01)	-0.02*** (0.01)	-0.01 (0.01)	0.00 (0.01)	-0.01 (0.01)	-0.05** (0.02)	-0.06*** (0.02)	-0.08*** (0.02)	-0.02* (0.01)	-0.02* (0.01)	-0.03*** (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02** (0.01)
Bond spread		0.06** (0.03)	0.04 (0.02)		0.24*** (0.04)	0.19*** (0.04)		-0.06 (0.06)	-0.03 (0.05)		0.24** (0.10)	0.23* (0.12)		0.13* (0.07)	0.15** (0.06)		0.12** (0.05)	0.09* (0.05)
PE ratio		0.00 (0.01)	-0.02* (0.01)		0.04*** (0.01)	-0.02 (0.02)		0.07*** (0.02)	-0.01 (0.02)		0.03 (0.03)	-0.03 (0.04)		0.04** (0.02)	0.04 (0.03)		0.02 (0.02)	0.00 (0.01)
Mkt return		0.00 (0.01)	0.00 (0.01)		-0.02 (0.01)	-0.01 (0.02)		0.00 (0.02)	0.00 (0.02)		-0.06* (0.03)	-0.06 (0.04)		-0.02 (0.02)	-0.02 (0.02)		-0.01 (0.02)	-0.01 (0.01)
Constant	1.89*** (0.10)	1.86*** (0.33)	2.23*** (0.36)	1.12*** (0.14)	-0.53 (0.45)	0.33 (0.42)	0.37* (0.20)	-1.49** (0.59)	-0.12 (0.59)	0.08 (0.37)	-1.24 (1.11)	-0.11 (1.06)	-0.01 (0.24)	-1.52** (0.73)	-2.21*** (0.64)	0.66*** (0.18)	-0.23 (0.57)	-0.27 (0.58)
Standardized IRR, in %																		
VIX	-7.64%	-10.71%	-12.00%	-4.28%	-9.55%	-14.65%	-5.66%	4.02%	-8.68%	-34.63%	-41.91%	-48.50%	-16.63%	-18.35%	-20.50%	-14.83%	-17.92%	-18.34%
Bond spread		9.81%	6.10%		45.05%	34.25%		-8.55%	-5.06%		43.42%	42.84%		22.46%	25.24%		20.04%	15.58%
PE ratio		-1.27%	-7.27%		21.88%	-9.51%		38.14%	-4.29%		18.62%	-15.67%		24.50%	22.76%		12.52%	1.06%
Mkt return		-0.19%	0.93%		-7.04%	-5.01%		0.02%	0.51%		-21.73%	-21.76%		-7.38%	-6.68%		-6.13%	-4.00%
Campaign observations	1,257	1,257	1,257	629	629	629	290	290	290	100	100	100	150	150	150	306	306	306
Observations	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228
Pseudo R-squared	0.00	0.01	0.09	0.00	0.03	0.08	0.00	0.03	0.08	0.02	0.04	0.07	0.01	0.02	0.05	0.01	0.01	0.04
Month FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Time series variable	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Lagged dependent variable	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
SE Cluster	None	None	Month	None	None	Month	None	None	Month	None	None	Month	None	None	Month	None	None	Month

This table reports the results of a Negative Binomial Regression whereby the dependent variable is the count of the separate hedge fund activist objectives per month for each panel indicated. The objectives in Panels A to F are not mutually exclusive, for example, a hedge fund activist can target a corporate governance objective and an engage management objective in the same engagements. Each panel reports the standardized Incident Rate Ratios below the coefficients from the Negative Binomial regression, which indicate the proportionate change in the tactic for a one standard deviation move in the independent variable. Each panel includes three columns corresponding to different model specifications—Column (1) includes only the VIX as the independent variable, and Column (2) adds the market control variables. Column (3) includes an indicator variable for each month, a time trend variable, and a lagged dependent variable to account for temporal dependencies and autocorrelation. Standard errors are clustered at the month level in column (3). For all columns, the independent variables are lagged by one month. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

As such, business strategy objectives are often pursued regardless of short-term market fluctuations, as they do not directly amplify market risks but rather aim to strengthen the firm's core operations over time. This longer-term focus may explain why business strategy campaigns show no significant sensitivity to the VIX or bond spread.

Engage management objectives show a notably stronger response to bond spreads than to VIX, likely due to the financial focus of these campaigns. Engage management campaigns typically aim to address issues through active dialogue with management, making company-specific financial health a more relevant factor. An increase in bond spreads indicates heightened financial strain and higher borrowing costs, signaling that a company may be under pressure to optimize shareholder value to regain investor confidence. Activists may see this as an opportunity to engage management in financial performance and value creation.

In contrast, VIX has a smaller effect on engage management campaigns relative to the bond spread (but in different directions). Broader market uncertainty may deter high-risk structural or financial campaigns, but it has less immediate relevance to objectives focused on engagement rather than intervention. For other activist objectives like corporate governance or recapitalization, both VIX and bond spreads influence campaign likelihood similarly (though in opposite directions) since they reflect different facets of risk that directly impact feasibility and stability. Engage management, however, aligns more closely with firm-specific financial indicators like bond spreads, making bond spreads a stronger determinant than VIX in these campaigns.

The results in Table 4 should be interpreted with caution due to inherent data and modeling limitations. The differing number of campaigns launched per objective complicates objective comparisons. For example, between 2005 and 2023, there were 1,257 corporate governance campaigns compared to only 100 for recapitalization. As a result, objectives with fewer campaigns may have less precise coefficient estimates, leading to larger standard errors and affecting the reliability of their effects. Additionally, this discrepancy impacts the standardized IRRs, as objectives with fewer baseline campaigns, such as recapitalization, show larger percentage changes for a one-standard-deviation increase in independent variables. The underlying driver of this could be that activists prefer some objectives to others in general, making the count of these higher. Therefore, only the direction, significance, and within-model comparisons should be considered in Table 4.

Another limitation arises from the significant number of zero counts when campaigns are broken down by objectives. While aggregate data shows at least one campaign launched each month, disaggregating the data results in some objectives having months with

zero campaigns. High zero counts can challenge the Negative Binomial model by potentially violating its assumptions, leading to underestimation of variance and biased coefficient estimates. Although Zero-Inflated Negative Binomial or Hurdle models could address excess zeros, we believe these zeros result from the same drivers as positive counts. Therefore, we retain the standard Negative Binomial model to maintain consistency and interpretability across our analyses.

4.3 Campaign Objectives and Volatility Split into Quartiles

Our results so far indicate a negative association with the number of hedge fund activist engagements and market uncertainty, an association which holds across the different objectives. We extend our analysis with the hypothesis that the effect of market uncertainty will not be linear across different levels of VIX, with higher levels of VIX being associated with a greater decline in hedge fund activist engagements. To explore this in Table 5 we use a Negative Binomial regression with the same independent variables and methodology as in Table 3. However, we have assigned quartile dummy variables for the VIX to determine the influence of market uncertainty in different periods of volatility. The cut-off values for our data sample's VIX quartiles are shown in appendix Table A4. This stratification allows us to assess how varying levels of market uncertainty influence the frequency of activist interventions. Q1 represents the lowest volatility periods, and Q4 the highest. The coefficients for each quartile measure the effect of being in that quartile, compared to the baseline of Q1. The regression formula is defined as:

$$Y_t = \exp(\beta_0 + \beta_1 VIX\ Quartile_{Q, t-1} + \beta_2 bond\ spread_{t-1} + \beta_3 CAPE_{t-1} + \beta_4 VWRET_{t-1}) + \epsilon_t \quad (5)$$

Table 5 column (1) of Panel A reports the results for all engagements, we find a negative association with the number of engagements in Q4 compared to Q1, significant at the 1% level. This result is persistent in column (2) and increases in significance as we find a negative association in Q3, significant at the 5% level. In column (3) we report the IRR's based on the coefficients in column (2) which show the percentage decrease in the expected count of the dependent variable compared with Q1. In Panel A column (3), we find that in the volatility periods of Q3 and Q4 there are 10.62% and 25.90% fewer hedge fund activist engagements when compared with Q1, respectively. These findings support the hypothesis that hedge fund activists are increasingly risk averse during times of increased uncertainty.

Breaking it down for each objective, in Panel B we observe that corporate governance in column (2) exhibits a monotonically declining coefficient as the VIX moves to its highest periods of volatility. In VIX quartile 2 we see a positive association, with the IRR indicating a 23.24% increase in the expected count compared to Q1, significant at the 1% level, whilst in Q4 we see a decline of 19.17%. This aligns with the reasoning discussed in 4.2, where activists are less likely to engage in corporate governance interventions during periods of high volatility, as these actions could compound the external risks already facing the firm in periods

Table 5
The effect of periods with high volatility on hedge fund activist engagements

	(1)	(2)	(3 - IRR)	(1)	(2)	(3 - IRR)	(1)	(2)	(3 - IRR)	(1)	(2)	(3 - IRR)	(1)	(2)	(3 - IRR)	(1)	(2)	(3 - IRR)	(1)	(2)	(3 - IRR)
	<i>A. No. of engagements</i>			<i>B. Corporate Governance</i>			<i>C. Engage Management</i>			<i>D. Business Strategy</i>			<i>E. Recapitalization</i>			<i>F. Block Merger</i>			<i>G. Takeover or Propose Sale</i>		
VIX Quartile (Q4 = highest)																					
Q1	1.04*** (0.27)	1.62*** (0.30)	--	1.58*** (0.31)	1.90*** (0.32)	--	-0.85*** (0.42)	-0.19 (0.42)	--	-1.51*** (0.57)	-0.29 (0.54)	--	-2.28** (1.03)	-1.48 (1.07)	--	-1.89*** (0.68)	-2.64*** (0.84)	--	-0.54 (0.53)	-0.52 (0.64)	--
Q2	0.14 (0.09)	0.06 (0.09)	5.94%	0.19* (0.10)	0.21*** (0.09)	23.24%	0.25* (0.15)	0.15 (0.15)	16.76%	0.20 (0.21)	0.09 (0.19)	9.21%	0.19 (0.31)	0.27 (0.30)	30.37%	-0.16 (0.23)	-0.07 (0.25)	-7.14%	0.10 (0.17)	0.08 (0.17)	7.80%
Q3	0.01 (0.09)	-0.11** (0.09)	-10.62%	0.03 (0.10)	-0.10* (0.10)	-9.19%	0.16 (0.15)	0.10 (0.15)	10.49%	0.25 (0.20)	-0.04 (0.20)	-4.31%	-0.26 (0.34)	-0.38** (0.34)	-31.63%	-0.35 (0.24)	-0.27 (0.24)	-23.47%	-0.31* (0.18)	-0.30 (0.20)	-26.19%
Q4	-0.25*** (0.10)	-0.30*** (0.09)	-25.90%	-0.22* (0.11)	-0.21** (0.10)	-19.17%	-0.06 (0.16)	-0.22 (0.17)	-19.46%	-0.01 (0.23)	-0.32* (0.23)	-27.54%	-1.22*** (0.43)	-1.44*** (0.45)	-76.27%	-0.25 (0.25)	-0.27 (0.25)	-23.41%	-0.49** (0.20)	-0.52* (0.21)	-40.37%
Bond spread	0.13*** (0.03)	0.08*** (0.02)	--	0.06* (0.03)	0.04* (0.03)	--	0.23*** (0.04)	0.19*** (0.04)	--	-0.05 (0.06)	-0.03 (0.05)	--	0.23** (0.10)	0.23** (0.10)	--	0.12* (0.07)	0.13** (0.06)	--	0.12** (0.05)	0.10* (0.05)	--
PE ratio	0.03*** (0.01)	-0.01 (0.01)	--	0.00 (0.01)	-0.01 (0.01)	--	0.04*** (0.01)	-0.01 (0.02)	--	0.07*** (0.02)	-0.01 (0.02)	--	0.04 (0.03)	-0.02 (0.04)	--	0.05** (0.02)	0.05* (0.03)	--	0.02 (0.02)	0.00 (0.02)	--
Mkt return	-0.01 (0.01)	0.00 (0.01)	--	0.00 (0.01)	0.00 (0.01)	--	-0.01 (0.01)	-0.01 (0.01)	--	0.00 (0.02)	0.00 (0.02)	--	-0.05* (0.03)	-0.05 (0.03)	--	-0.01 (0.02)	-0.01 (0.02)	--	-0.01 (0.02)	-0.01 (0.01)	--
Observations	228	228		228	228		228	228		228	228		228	228		228	228		228	228	
Pseudo R-squared	0.03	0.09		0.02	0.10		0.04	0.08		0.03	0.09		0.04	0.08		0.02	0.05		0.02	0.05	
Month FE	No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes	
Time series variable	No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes	
Lagged dependent variable	No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes	
SE Cluster	None	Month		None	Month		None	Month		None	Month		None	Month		None	Month		None	Month	

This table reports the results of a Negative Binomial Regression with the dependent variable being the hedge fund activists engagement or objective for each Panel indicated. We have assigned an indicator variable for the different quartiles of VIX over the sample period, for example, Q1 captures the periods with the lowest 25% VIX values in the total sample. The results for Q2 - Q4 indicate the change with respect to the reference group, in this case Q1. The independent variable in Panel A is the total number of hedge fund activist engagements. Panels B to G report results for the hedge fund activists' objective, which are not mutually exclusive, for example a corporate governance objective can occur at the same time as an engage management objective. Column (1) in each regression includes all market control variables. Column (2) includes an indicator variable for each month, a time trend variable, and a lagged dependent variable to account for temporal dependencies and autocorrelation. Standard errors are clustered at the month level in column (2). Finally, in column (3) we calculate the incident rate ratios based on our results in column (2), which indicate the proportion change in the count for each panel relative to the reference group (Q1). For all columns the independent variables are lagged by one month. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

of volatility. In contrast, during low-volatility periods, governance-related objectives appear to be substantially more popular.

Panel C reports the results for engage management objectives. We find that only Q2 in column (1) exhibits a significant positive association, similar to corporate governance. However, this relationship is not persistent when adding fixed effects and the control variables in column (2). This finding reinforces the argument in Section 4.2 that engage management campaigns may be driven more by firm-specific financial indicators, such as bond spreads, rather than broader market uncertainty.

For takeover or propose sale in Panel G, we also observe negative, statistically significant coefficients in Q4 of -0.52, resulting in a -40.37% IRR. These results suggest that high volatility environments deter activists from engaging in M&A-related activities due to increased risks.

For recapitalization in Panel E column (2), the results show a negative association in Q3 and Q4, statistically significant at the 5% and 1% levels, respectively. This likely indicates that activists focus on dividend payouts or equity issuance but refrain from such activities during periods of high volatility. Consequently, they do not engage in actions like debt restructuring or leverage reduction in response to VIX, which would have necessitated a positive coefficient.

While splitting the VIX into quartiles provides a more nuanced understanding of activist engagements across objectives, it remains to be seen whether this relationship holds true across different target firm sizes. Firm size is a strong indicator of the amount of invested capital, potentially influencing hedge fund engagement decisions regardless of the objective. This relationship is investigated below in section 4.4.

4.4 Volatility Splits Across Target Size

The size of the target is a potential determinant of activist behavior during market uncertainty. In Table 6, we observe that there are more Micro- and Small capitalization firm engagements compared to Mid- and Large capitalization firms. This could stem from the underlying rationale that smaller firms are less bureaucratic, more agile and that it could be easier to implement campaigns, whilst it is more costly for an activist to launch a campaign against a larger target. Furthermore, as activists acquire an ownership share between 5-15% (Greenwood and Schor, 2008; Brav et al., 2008), they require smaller investment sizes, which enables activists to diversify idiosyncratic risk across multiple investments in small capitalization firms. Thus, the increase in investment capital required for larger firms makes us interested in understanding whether the VIX has a different impact on targets with different market capitalizations, with the hypothesis that engagements will decline as the targets firm size increases.

To explore this, we utilize formula (5) and the same analysis as in Table 5 but now split the engagements into three samples based on the inflation adjusted market capitalizations of the target firm. Table 6 reports three panels, with each displaying results for target firms being split into firms below \$250m (Micro-capitalization), firms larger than \$2bn (Mid-and Large capitalization), and firms in between (Small capitalization), inflation adjusted to 2023 dollars using the CPI index, calculated as:

$$MC_{adj, 2023} = MC_t \cdot \frac{CPI_{2023}}{CPI_t} \quad (6)$$

We use a Negative Binomial regression with the count of engagements as the dependent variable, and with the VIX split into quartiles with Q1 representing the lowest quartile of VIX and Q4 the highest, together with the other market control independent variables. When reporting the IRR and AME the values are based on the regression coefficients in column (2).

In Table 6 we find that the VIX consistently exhibits a negative magnitude across all firm sizes in Q4, with Large-Mid and Small capitalizations significant at the 1% level, and Micro-capitalization at the 10% level. The beta values indicate that Large, Mid, and Small capitalizations are more strongly impacted, with a beta of -0.51, while the Micro-capitalization beta is half this size at -0.23. When expressed in IRR and AME, we see that a one standard deviation increase in the VIX corresponds to an approximate 40% decrease in activist engagements in Large, Mid, and Small capitalizations the following month, equating to around 1.4 fewer engagements. For Micro-capitalizations, the results imply a 20.92% decrease in

Table 6
Market uncertainty and hedge fund activism engagements by target size

	(1)	(2)	(3 - IRR)	(4 - AME)	(1)	(2)	(3 - IRR)	(4 - AME)	(1)	(2)	(3 - IRR)	(4 - AME)
	A. Sample: Large Targets (Size >\$2000 M inflation adjusted)				B. Sample: Small Targets (Size >\$250 & <\$2000 M inflation adjusted)				C. Sample: Micro Targets (Size <\$250 M inflation adjusted)			
VIX Quartile (Q4 = highest)												
Q1	-2.03*** (0.42)	-0.44 (0.29)	--	--	0.59 (0.39)	0.84** (0.39)	--	--	1.04** (0.42)	1.36*** (0.46)	--	--
Q2	0.12 (0.15)	-0.03 (0.15)	-2.49% (0.15)	-0.09 (0.12)	0.11 (0.13)	0.12 (0.07)	12.57% (0.13)	0.42 (0.14)	0.25* (0.13)	0.15 (0.10)	16.10% (0.12)	0.47 (0.14)
Q3	0.07 (0.15)	-0.24* (0.12)	-21.17% (0.15)	-0.73 (0.12)	-0.15 (0.13)	-0.20 (0.14)	-17.75% (0.13)	-0.60 (0.14)	0.07 (0.14)	-0.09 (0.12)	-8.34% (0.12)	-0.24 (0.14)
Q4	-0.25 (0.17)	-0.51*** (0.14)	-39.99% (0.17)	-1.38 (0.14)	-0.52*** (0.15)	-0.51*** (0.17)	-40.18% (0.15)	-1.35 (0.17)	-0.15 (0.15)	-0.23* (0.13)	-20.92% (0.13)	-0.61 (0.13)
Bond spread	0.11** (0.04)	0.10*** (0.04)	10.61% (0.04)	0.29 (0.04)	0.08** (0.04)	0.06*** (0.02)	5.91% (0.04)	0.17 (0.02)	0.20*** (0.04)	0.15*** (0.04)	16.10% (0.04)	0.41 (0.04)
PE ratio	0.10*** (0.01)	0.02 (0.01)	1.98% (0.01)	0.06 (0.01)	0.01 (0.01)	0.00 (0.02)	-0.25% (0.01)	-0.01 (0.02)	-0.03** (0.01)	-0.05*** (0.02)	-5.08% (0.01)	-0.14 (0.02)
Mkt return	-0.01 (0.01)	-0.01 (0.01)	-0.85% (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.56% (0.01)	-0.02 (0.01)	0.00 (0.01)	0.01 (0.01)	0.66% (0.01)	0.02 (0.01)
Number of engagements	652	652	652	652	677	677	677	677	628	628	628	628
Observations	228	228	228	228	228	228	228	228	228	228	228	228
Pseudo R-squared	0.06	0.13	0.13	0.13	0.02	0.06	0.06	0.06	0.06	0.10	0.10	0.10
Month FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Time series variable	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Lagged dependent variable	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
SE Cluster	None	Month	Month	Month	None	Month	Month	Month	None	Month	Month	Month

This table reports the results of a Negative Binomial Regression with the dependent variable being the hedge fund activists engagements for each sample indicated. We have assigned an indicator variable for the different quartiles of VIX over the sample period, for example, Q1 captures the periods with the lowest 25% VIX values in the total sample. The results for Q2 - Q4 indicate the change with respect to the reference group, in this case, Q1. Column (1) in each regression includes all market control variables. Column (2) includes an indicator variable for each month, a time trend variable, and a lagged dependent variable to account for temporal dependencies and autocorrelation. Standard errors are robust and clustered at the month level in column (2). In Column (3) we calculate the incident rate ratios, which indicate the proportion change in the count for each panel relative to the reference group (Q1). In column (4) we calculate the average marginal effect, which indicates the absolute change in the expected count for each independent variable relative to the reference group (Q1). For all columns, the independent variables are lagged by one month. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

engagements, quantifiably resulting in 0.61 fewer engagements. In Q3, only Large-Mid capitalization firms show a statistically significant negative magnitude at the 10% level.

Our empirical results indicate that the magnitude in changes of the VIX for Large-Mid and Small capitalization firms is twice as strong than for Micro-capitalization firms. These results support our hypothesis that activists engage less with larger firms in times of volatility due to the increase in capital required to acquire meaningful stakes. As Brav et al. (2008) note, securing significant positions in large firms introduces considerable idiosyncratic portfolio risk, which will compound during periods of high market uncertainty. Higher investment requirements in large firms not only offer the potential for greater absolute returns but also increase the risk of significant losses, making such investments less attractive during volatile times. Additionally, large companies often possess more complex governance structures, which can prolong campaign lengths and increase the costs for hedge fund activists, while entrenched management teams and institutional investors may resist changes. In times of uncertainty, firms benefit from being agile and adaptive to navigate challenging conditions. In contrast, small firms require smaller capital commitments to obtain meaningful stakes and typically have more streamlined decision-making. This flexibility allows activists to allocate their resources more efficiently, focusing on opportunities where their interventions can have a more immediate and tangible impact.

When examining the effect of bond spread, we observe that Micro and Small capitalization firms exhibit the strongest statistical significance at the 1% level, while Large-Mid capitalization firms are significant at the 10% level. Although the positive direction of the relationship is consistent across all firm sizes, the magnitude of the impact varies. Micro capitalizations are the most affected by bond spreads, with a coefficient of 0.15, followed by Large-Mid capitalizations at 0.10, and Small capitalizations at 0.06.

The stronger impact of bond spreads on Micro capitalization firms suggests that activists focus on more vulnerable companies, where financial distress creates opportunities for intervention. When bond spreads widen, smaller firms often face greater challenges than larger firms due to limited access to capital markets, lower liquidity, and weaker credit terms. These firms may struggle with reduced cash reserves and heightened pressure from creditors, making them more susceptible to financial strain. Combined with the advantages of higher agility and lower investment requirements, activists see these firms as promising targets for swift operational improvements, cost reductions, or strategic realignments that can enhance financial stability and yield higher returns. However, investing in Micro capitalizations can also be riskier due to their vulnerability and potential volatility.

In contrast, larger firms typically have better liquidity and more favorable credit terms, which reduces financial risk. Yet, they require greater capital to influence, are more resilient to change due to complex governance structures, and often have alternative means to address financial distress, such as accessing capital markets or leveraging established relationships with creditors.

Interestingly, Small capitalization firms exhibit the smallest positive magnitude in response to bond spreads. One possible explanation is that Small capitalizations represent a middle ground where the risk-reward profile is less attractive to activists compared to Micro capitalizations and Large-Mid capitalizations. They may not provide attractive opportunities for improvement, may be too resilient to change quickly, require more capital than Micro capitalizations, and carry higher risks compared to the relative stability of larger firms.

4.5 Volatility and Tactics

After a hedge fund activist engages with a target, they are left with a decision on which tactic to use to pursue their proposal. For hedge fund activists each tactic exhibits a distinct cost profile, with more confrontational tactics having an increased required capital to initiate (Gantchev, 2013). Similarly, Brav et al. (2008) found that invested capital and percentage ownership share are, on average, larger for hostile tactics whilst generating a greater abnormal return. These findings present a trade-off conundrum for hedge fund activists when deciding which tactic to utilize. We hypothesize that the risk averse behavior persists for the choice of tactic, and as such as market uncertainty increases hedge fund activists will shift their preference to less costly, less risky non-confrontational tactics.

To first explore the count of each tactic in response to market uncertainty, we use a Negative Binomial regression and formula (4), with the same methodology as used for Table 3. However, now the dependent variable is the tactic employed for each proposal: confrontational, moderate or non-confrontational. Furthermore, to improve the interpretability of the coefficients we calculate the IRR for the market control variables, which are reported below the regression results in Table 7.

Panel A of Table 7 presents the results for confrontational tactics. In column (1) and (2) we observe no statistically significant association between confrontational tactics and VIX or bond spread across both models. Instead, firm specific factors may play a more pivotal role in determining the use of hostile tactics.

In contrast, when investigating lower cost tactics, significant effects on market uncertainty emerge. In Panel B for Moderate tactics, we find statistical significance for both the VIX and bond spread at the 1% and 10% level respectively across all columns. Quantifiably, the IRR calculation for moderate tactics implies that a one standard deviation increase in the VIX is associated with a 30.59% decrease in the expected count of moderate tactics. On the other hand, when analyzing the bond spread, we see a 12.82% increase in the expected count for moderate tactics with a one standard deviation increase in the bond spread. Furthermore, our results imply that as the hostility of the tactic decreases, the significance and magnitude of the bond spread's effect increases. In Panel C for non-confrontational tactics, the bond spreads coefficient is 0.24, significant at the 1% level. This translates to a 44.84% increase in the expected count for non-confrontational tactics. All our findings are persistent when adding control variables and month fixed effects in column (3).

Table 7
The effect of market uncertainty on the tactic employed by hedge fund activists

	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	<i>A. Confrontational</i>			<i>B. Moderate</i>			<i>C. Non-confrontational</i>		
VIX	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.03*** (0.01)	-0.04*** (0.01)	-0.04*** (0.01)	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Bond spread		0.02 (0.04)	0.01 (0.05)		0.09* (0.05)	0.08* (0.04)		0.23*** (0.04)	0.24*** (0.05)
PE ratio		-0.03** (0.01)	-0.03** (0.01)		0.00 (0.01)	0.00 (0.01)		0.08*** (0.01)	0.08*** (0.01)
Mkt return		0.00 (0.01)	0.00 (0.01)		-0.01 (0.01)	-0.01 (0.02)		-0.01 (0.01)	-0.01 (0.01)
Constant	0.79*** (0.14)	1.72*** (0.50)	2.15*** (0.55)	1.66*** (0.16)	1.56*** (0.51)	1.92*** (0.49)	1.46*** (0.14)	-1.21*** (0.43)	-1.52*** (0.43)
Standardized IRR, in %									
VIX	-0.82%	-7.45%	-9.21%	-24.84%	-29.13%	-30.59%	-3.92%	-4.18%	-6.34%
Bond spread		2.62%	2.08%		14.20%	12.82%		41.47%	44.84%
PE ratio		-14.17%	-15.42%		-0.10%	-1.36%		45.09%	45.64%
Mkt return		-0.97%	-0.32%		-5.83%	-5.42%		-4.96%	-3.94%
Observations	228	228	228	228	228	228	228	228	228
Pseudo R-Squared	0.00	0.01	0.04	0.02	0.02	0.05	0.00	0.03	0.05
Month FE	No	No	Yes	No	No	Yes	No	No	Yes
SE Cluster	None	None	Month	None	None	Month	None	None	Month

This table reports the results of a Negative Binomial Regression with the dependent variable being the monthly count of the tactic a hedge fund activist used for a campaign for each panel indicated. The tactics in Panels A to C are mutually exclusive. Each panel reports the standardized Incident Rate Ratios below the coefficients from the Negative Binomial regression, which indicate the proportionate change in the tactic for a one standard deviation move in the independent variable. The three columns correspond to different model specifications—Column (1) includes only the VIX as the independent variable, and Column (2) adds the market control variables. Column (3) includes an indicator variable for each month. Standard errors are clustered at the month level in column (3). For all columns, the independent variables are lagged by one month. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

The empirical results so far imply an increase in the count for less costly tactics as the bond spread rises, with minimal association with the VIX. However, to investigate how the preference of tactics varies for hedge fund activists, we employ a logistic regression in Table 8 to see the impact of market uncertainty on the likelihood of employing each tactic. The logistic regression results model the probability of choosing each tactic based on the independent market control variables, allowing us to analyze the behavior of hedge fund activists on the preference for which tactic is used during market uncertainty.

In Table 8 we find results that support our initial findings in Table 7. More specifically, when comparing all three tactics we find a monotonically increasing magnitude and significance on both the VIX and bond spread from confrontational to non-confrontational tactics. In column (1) we find a negative association with the bond spread for confrontational and moderate tactics, significant at the 1% and 10% levels respectively, whilst a positive association exists for non-confrontational tactics, significant at the 1% level. This trend substantiates the increased preference for low-cost tactics in periods with greater firm level distress. When analyzing the VIX, for moderate tactics we see a similar negative impact as in

Table 7, however, we now find a positive relationship with the VIX on the likelihood of using a non-confrontational tactic, significant at the 1% level.

Table 8
The influence of market uncertainty on the likelihood and probability of each tactic used

	(1)	(2)	(3 - AME)	(1)	(2)	(3 - AME)	(1)	(2)	(3 - AME)
	<i>A. Confrontational</i>			<i>B. Moderate</i>			<i>C. Non-confrontational</i>		
VIX	0.01 (0.01)	0.01 (0.01)	1.36%	-0.04*** (0.01)	-0.04*** (0.01)	-6.69%	0.02*** (0.01)	0.02*** (0.01)	4.35%
Bond Spread	-0.18*** (0.05)	-0.16*** (0.05)	-4.25%	-0.08* (0.04)	-0.10 (0.04)	-3.25%	0.20*** (0.04)	0.21*** (0.04)	7.41%
PE Ratio	-0.09*** (0.02)	-0.09*** (0.02)	-7.40%	-0.04*** (0.01)	-0.04* (0.02)	-3.74%	0.10*** (0.01)	0.09*** (0.01)	10.64%
Mkt return	0.01 (0.01)	0.01 (0.01)	0.62%	0.00 (0.01)	-0.01 (0.01)	-0.64%	-0.01 (0.01)	0.00 (0.01)	0.16%
Log Market Cap		-0.12* (0.06)	--		-0.14** (0.06)	--		0.21*** (0.05)	--
Leverage		0.11 (0.20)	--		-0.03 (0.19)	--		-0.07 (0.18)	--
Profitability		0.13 (0.20)	--		0.13 (0.21)	--		-0.19 (0.19)	--
Constant	1.64*** (0.56)	2.02** (0.58)	--	1.17** (0.49)	1.83*** (0.53)	--	-3.84*** (0.49)	-4.88*** (0.51)	--
Observations	2,030	1,953		2,030	1,953		2,030	1,953	
Month FE	No	Yes		No	Yes		No	Yes	
SE Cluster	None	Month		None	Month		None	Month	
Pseudo R-Squared	0.02	0.03		0.01	0.02		0.02	0.05	

This table reports the results of a logistic regression estimating the likelihood of which tactic will be employed by a hedge fund activist for each Panel indicated. The dependent variables are binary, where 1 indicates the tactic was employed. The dependent variables are classified as the different levels of hostility for each engagement, with confrontational tactics being the most hostile. Each tactic is mutually exclusive, meaning only one tactic can be assigned to each engagement. Each panel includes two columns corresponding to different model specifications—Column (1) includes all market control independent variables. Column (2) includes an indicator variable for each month and firm-specific variables. The firm-specific variables are calculated as follows: Profitability (EBITDA over total assets); Leverage (Total debt over total assets). Standard errors are clustered at the month level in column (2). In Column (3) we calculate the average marginal effect (AME) of the independent variable scaled to the independent variables' standard deviation. For example Panel B in Column (3) the AME for bond spread calculates the change in probability of the outcome occurring. For all columns, the independent variables are lagged by one month. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

To quantify the results, we convert the coefficients in column (1) to the average marginal effect, reported in column (3 – AME). The AME in this case indicates the shift in marginal probability for each tactic with a one standard deviation increase in the independent variable. We find that a one standard deviation increase in the bond spread results in a 4.25% decrease in the probability of employing a confrontational tactic, significant at the 1% level. Conversely, for non-confrontational tactics a one standard deviation increase in the bond spread results in a 7.41% increase in the marginal probability, significant at the 1% level. Furthermore, when analyzing the VIX, we find that a one standard deviation increase in the VIX results in a 4.35% increase in the marginal probability that a non-confrontational tactic is used and a 6.69% decrease that a moderate tactic is used, both significant at the 1% level.

Based on the combined results from Table 7 and 8 we see a shift in the strategic preference of hedge fund activists under heightened market uncertainty, both in absolute terms and in the likelihood of tactic selection. We see that hedge fund activists exhibit a preference for less confrontational tactics during periods of increased uncertainty.

However, the interpretation of these results faces many challenges. First, whilst we see a preference for non-confrontational tactics with market-wide firm distress, this could stem from targeting tactics to specific firm characteristics. In other words, hedge fund activists may use low-cost tactics, with the perception that distressed firms are more susceptible to cooperating with a hedge fund activists' non-confrontational tactic. To examine the persistence of our findings and control for a firm's distress, we include the target firm's log market capitalization, leverage and profitability in column (2) of Table 8. The target firm's market capitalization, leverage and profitability are calculated with the latest reported statements before the engagement date. Whilst we do find statistical significance that the likelihood of using non-confrontational tactics increases as the targets firm size increases, we see that the significance and magnitude of our market variables remain unchanged. These results substantiate the finding that market uncertainty and market-wide distress has a critical role in influencing a hedge fund activists' tactic choice.

The second challenge is that each tactic may be more or less successful during market uncertainty, and thus the underlying shift in preference could be biased due to an associated variation in the success rate. Brav et al. (2008) found that each tactic has a similar level of success rate, concluding that hedge funds should only use more confrontational tactics when the expected benefit from a successful proposal is also higher. Our sample aligns with the conclusion of Brav et al. (2008), as we find a minimal difference in success rates across tactics. Our sample has success rates of 58.0%, 58.2% and 49.3% for confrontational, moderate and non-confrontational tactics respectively, as shown in Table 1. However, it is possible that each tactic could have a different success rate profile under different market conditions. To explore this association, we test the alternative hypothesis that hedge fund activist's preference for non-confrontational tactics in market uncertainty is due to non-confrontational tactics also being more successful during these times. To test for this, we conduct a logistic regression where the dependent variable is the nominal success rate, defined as a proposal either being completely successful or partially successful, for each tactic employed whilst controlling for the same firm characteristics as in Table 8.

The results, presented in Table 9, indicate limited evidence that the success rates of the different tactics vary during times of market uncertainty. We do see that as the bond

spread increases the success rate of confrontational tactics increases, significant at the 5% level. However, the broader absence of significance on the market control variables across the different tactics implies that the success rate for each tactic is not influenced by market conditions. This finding, along with the lack of difference in success rates in equilibrium, further supports the notion that hedge fund activists' strategic decisions are influenced by market uncertainty when deciding which tactic to employ, rather than differences in the expected success of each tactic.

Table 9
The influence of market uncertainty on the success rate of each tactic

	(1)	(2)	(1)	(2)	(1)	(2)
	<i>A. Confrontational</i>		<i>B. Moderate</i>		<i>C. Non-confrontational</i>	
VIX	-0.02 (0.01)	-0.02 (0.02)	0.01 (0.01)	0.02 (0.01)	0.00 (0.01)	0.00 (0.01)
Bond spread	-0.14* (0.08)	-0.15** (0.07)	0.07 (0.07)	0.07 (0.09)	-0.06 (0.06)	-0.07 (0.08)
PE ratio	-0.07*** (0.03)	-0.06*** (0.02)	-0.01 (0.03)	0.00 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Mkt return	0.02 (0.02)	0.02 (0.03)	-0.01 (0.02)	0.00 (0.01)	-0.02 (0.02)	-0.02 (0.02)
Market cap		0.00 (0.00)		0.00 (0.00)		-0.00** (0.00)
Leverage		-0.51 (0.31)		0.07 (0.39)		0.09 (0.34)
Profitability		-0.75 (0.50)		0.13 (0.42)		0.46 (0.33)
Constant	2.93*** (0.90)	3.13*** (0.89)	0.22 (0.96)	-0.17 (0.85)	0.68 (0.65)	0.77 (0.86)
Observations	467	467	616	616	854	854
Month FE	No	Yes	No	Yes	No	Yes
SE Cluster	None	Month	None	Month	None	Month
Pseudo R-Squared	0.03	0.02	0.00	0.03	0.00	0.02

This table reports the results of a logistic regression estimating the likelihood of success rate for each tactic. The dependent variables are in binary, where 1 indicates the tactic was nominally successful. Nominal success is defined as the engagement was successful or a settlement was reached with the target. Each panel includes two columns corresponding to different model specifications—Column (1) includes all market control independent variables. Column (2) includes an indicator variable for each month and firm-specific variables. The firm-specific variables are calculated as follows: Profitability (EBITDA over total assets); Leverage (Total debt over total assets). Standard errors are clustered at the month level in column (2). For all columns, the independent variables are lagged by one month. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Our results indicate that hedge fund activists have a preference for non-confrontational tactics as the VIX and bond spread rise. The shift in preference for tactics can be underscored by the underlying decision-making behavior of hedge funds and their organizational structure, that they are aiming to optimize risk-adjusted returns. The implications of this relationship are significant and are supported by the costs associated with different tactics and their risk-return profile. While previous literature has found that confrontational tactics are often associated with higher announcement period abnormal returns compared with non-confrontational tactics (Brav et al., 2008; Brav et al., 2015; Krishnan et al., 2016), these gross returns do not account for the higher costs and risks incurred. Gantchev (2013) provided insight into the underlying costs for hedge fund activists different tactics. Determining that on average a non-confrontational tactic has a cost of \$2.94m USD, a moderate tactic has an additional cost of \$1.83m USD and a confrontational tactic has an additional cost of \$5.94m USD. Furthermore, Gantchev (2013) explored the relationship between hedge fund activist tactics and their average annualized abnormal net returns for the activist. His results indicate a decreasing average annualized abnormal net return from confrontational to non-confrontational tactics. These findings suggest that whilst confrontational tactics may yield higher gross returns, it can be concluded that from the hedge fund activists' perspective these returns are diminished from the increased costs incurred with more confrontational tactics. Combined with our findings in Table 8 we see that hedge fund activists use tactics that exhibit the highest abnormal net return and have the lowest cost in times of market uncertainty, implying a risk averse behavior that limits the exposure of their capital.

Furthermore, as the VIX and bond spread rises, stability for target firms is important. On the one hand, a hostile takeover or legal proceeding could result in further instability for firms and an increased risk for the hedge fund activist. On the other hand, engaging in discussions with management and shareholder proposals offer hedge fund activists a flexible and cooperative method to support firms in times of market uncertainty. Providing a further explanation for the preference for non-confrontational tactics as the VIX and bond spread rises.

Our results extend the work of Brav et al. (2008), who found that the hostility levels of hedge fund activists' matter in terms of market reactions, outcomes and the marginal benefit for hedge fund activists. We propose a new link by demonstrating the decision-making process of hedge fund activists when assessing the trade-offs in determining which tactics to employ in times of market uncertainty. Specifically, we find that hedge fund activists increasingly favor tactics that provide greater annualized abnormal net returns, require lower

investment capital and are less intrusive for target firms during times of heightened uncertainty. These findings align with the principles of modern portfolio theory, where diversification and risk minimization are paramount. Ultimately, the strategic shift from hedge fund activists reflects a risk averse approach aimed at optimizing risk adjusted returns in uncertain market environments, whilst maintaining strategic flexibility with the option to escalate to a more confrontational tactic if required.

As discussed previously, limitations arise in our results. Whilst we have controlled for firm specific characteristics, it is likely that firm specific events, information or other variables are not captured by the latest financial report and can have a large influence over the preference of tactic employed by a hedge fund activist.

5. Discussion and Further Research

The findings in this paper present relevant insights for a range of stakeholders, including publicly listed companies, management teams, corporate boards, hedge funds, and shareholders. These actors can draw conclusions and take proactive measures to anticipate activist behavior, mitigate risks, and leverage opportunities to benefit their interests. Furthermore, exploring additional areas of investigation, such as the performance implications for both target firms and hedge funds, could provide even greater benefits to these stakeholders and enhance our understanding of hedge fund activism.

Starting with publicly listed companies, management teams, and corporate boards, the results are relevant if they want to reduce the risk of activist hedge fund interventions. Managers should recognize that intervention risk increases during periods of rising bond spreads, particularly for micro-capitalization firms, while decreasing during times of high levels of VIX. Additionally, the risk of managerial replacement is highest during low-volatility periods when activists tend to focus on corporate governance objectives. Consequently, proactive defenses should be in place even when the VIX is low. By monitoring market volatility and bond spreads relative to industry benchmarks and comparing their financial health indicators with those of competitors, managers can assess the likelihood of activist engagement and take proactive measures to mitigate this risk.

Defensive actions for these actors include preparing a response plan to address activist campaigns and establishing a team of experienced legal and financial advisors. Diversifying the shareholder base can make it harder for activists to gain significant stakes, and regular communication with shareholders can reduce the likelihood of them siding with activists. Implementing defense mechanisms such as poison pills, which allow existing shareholders to purchase additional shares at a discount during hostile takeover attempts, and creating share classes with varying voting rights can decrease activists' ability to gain control, making the firm a less attractive target. Furthermore, structuring board terms to prevent rapid takeovers or implementing golden parachutes for managers in case of a takeover can increase the cost of an engagement for the hedge fund, thereby reducing the likelihood of being targeted. Ultimately, running a healthy company that adheres to best practices is the most effective defense, as well-managed companies are less likely to attract activist engagement.

Shifting focus to hedge funds, our findings offer insights for activist investors themselves. Our findings indicate that more confrontational tactics do not achieve higher success rates under volatile market conditions. Additionally, we observe that different tactics

exhibit similar success rates regardless of market volatility, suggesting that different approaches may not provide advantages during market volatile periods. Brav et al. (2008) concluded that hedge fund activists should only employ confrontational tactics when the expected benefits outweigh the additional costs for each engagement. We do not observe any general patterns that market uncertainty would influence this equilibrium in any direction, thus the cost-benefit analysis remains as a case-by-case evaluation for the hedge fund.

Furthermore, given that hedge funds are predominantly open-ended organizations, they are exposed to redemption risk and increased scrutiny regarding their performance relative to peers. Their organizational structure also creates stronger financial incentives compared to other institutional investors to generate returns. These factors underline the importance for hedge funds to optimize their risk-adjusted returns. Gantchev (2013) found that confrontational tactics are more costly; therefore, by limiting their use in market uncertainty hedge fund activists can limit risk and capital exposure in more volatile periods, allowing hedge fund activists to better achieve their goal of maximizing risk-adjusted returns.

In addition to hedge funds and corporate management, shareholders also stand to benefit from understanding these dynamics. Recognizing when and why activist interventions occur is important for assessing both the likelihood of an intervention and whether it aligns with their investment strategy. Knowing that activists are less active during periods of high VIX, particularly in relation to high-risk objectives, allows shareholders to focus on other priorities during these times. Conversely, understanding that activists pursue corporate governance objectives more often in low-volatility periods enables shareholders to proactively assess whether their investments might be targeted. For long-term investors, such governance changes may be welcomed if they contribute to sustainable growth. In contrast, short-term investors may view all activist interventions as high-risk due to the disruptive potential and unpredictable market reactions. Engaging proactively with target firms to address issues before activists intervene could be a suitable response for long-term shareholders, while for short-term shareholders, exiting the position might be preferable. By closely monitoring market conditions and the financial health of their investments, shareholders can anticipate potential interventions and make informed decisions to protect their returns. These insights are also valuable for institutional advisors and proxy advisory firms when guiding clients on portfolio management and shareholder engagement strategies.

While our study provides insights into the strategic considerations of various stakeholders, it also highlights areas for future research. The performance implications of engagements during market uncertainty for both target firms and hedge funds are yet to be

thoroughly explored. Brav et al. (2015) investigated the performance of firms targeted before a volatile period but not during volatile periods. Building on this, future studies could employ performance analyses similar to those utilized by Brav et al. (2008), Brav et al. (2015), and Gantchev (2013), comparing metrics such as stock returns, operational efficiency, and overall firm valuation of targets engaged by activists during volatile versus less volatile periods. It is plausible that although hedge fund activists exercise caution by limiting their investment capital and reducing the use of confrontational tactics, target firms may exhibit outperformance relative to their matched peer group. Exploring whether engagements initiated under heightened volatility lead to enhanced long-term firm performance could reveal that these firms potentially outperform those engaged during more stable market periods. Understanding this topic could introduce new investment strategies for individuals, where stock-picking targeted firms in times of market uncertainty becomes a lucrative opportunity.

6. Conclusion

This paper aims to broaden the understanding of hedge fund activism by investigating the influence of market factors on hedge fund activists' behavior. Firstly, we present descriptive statistics on an updated data sample for hedge fund activist engagements from 2005-2023. The results indicate that the characteristics of target firms to a matched peer group remain unchanged since earlier studies, specifically, hedge fund activists still target firms that are undervalued and exhibit profitability.

We then examine the impact of market uncertainty on the number of engagements, tactics and success rate of hedge fund activists. We see that periods with higher market uncertainty, as indicated by the VIX, result in a reduction in the number of hedge fund activist engagements. This association is most extreme in periods where market uncertainty is greatest and for target firms with larger market caps. For bond spread we find the opposite association, an increase in engagements as bond spreads rise. This suggests that hedge fund activists strategically time their interventions, demonstrating risk-averse behavior in response to market volatility while adopting an opportunistic approach when bond spreads increase.

Furthermore, we provide evidence that market uncertainty plays a real role in the trade off decision of which tactic to employ. Firstly, we find no variation in success rate for each tactic in market uncertainty, however we see a clear preference for low-risk, low-cost non-confrontational tactics as market uncertainty increases. Ultimately, we find that hedge fund activists exhibit a risk averse behavior and employ tactics that will optimize their risk-adjusted return in uncertainty. To further explore the return for hedge fund activists, investigating the impact of the engagements on the target firm's performance and net return for hedge fund activists for engagements made during market uncertainty would be an interesting topic for exploration.

7. References

- Appel, I.R., Gormley, T.A., Keim, D.B., 2019. Standing on the Shoulders of Giants: The Effect of Passive Investors on Activism. *The Review of Financial Studies*, 32(7), 2720–2774.
- Bali, T.G., Brown, S.J., Caglayan, M.O., 2014. Macroeconomic risk and hedge fund returns. *Journal of Financial Economics*, 114(1), 1-19.
- Becht, M., Franks, J., Grant, J., Wagner, H.F., 2017. Returns to Hedge Fund Activism: An International Study. *Review of Financial Studies*, 30(9), 2933–2971.
- Bebchuk, L.A., Brav, A., Jiang, W., Keusch, T., 2020. Dancing with activists. *Journal of Financial Economics*, 137(1), 1-41.
- Ben-Rephael, A., Choi, J., Goldstein, I., 2021. Mutual fund flows and fluctuations in credit and business cycles. *Journal of Financial Economics*, 139(1), 84-108.
- Betton, S., El Meslmani, N., Switzer, L.N., 2022. Volatility of implied volatility and mergers and acquisitions. *Journal of Corporate Finance*, 75, 102243.
- Bhagwat, V., Dam, R., Harford, J., 2016. The Real Effects of Uncertainty on Merger Activity. *The Review of Financial Studies*, 29(11), 3000–3034.
- Bonaime, A., Gulen, H., Ion, M., 2018. Does policy uncertainty affect mergers and acquisitions?. *Journal of Financial Economics*, 129(3), 531-558.
- Boyson, N.M., Gantchev, N., Shivdasani, A., 2017. Activism mergers. *Journal of Financial Economics*, 126(1), 54-73.
- Boyson, N.M., Mooradian, R.M., 2011. Corporate governance and hedge fund activism. *Review of Derivatives Research*, 14, 169–204.
- Bratton, W.W., 2007. Hedge funds and governance targets. *Georgetown Law Journal*, 95, 1375–1433.
- Brav, A., Jiang, W., Partnoy, F., Thomas, R., 2008. Hedge fund activism, corporate governance, and firm performance. *Journal of Finance*, 63(4), 1729–1775.
- Brav, A., Jiang, W., Kim, H., 2015. Recent advances in research on hedge fund activism: Value creation and identification. *Annual Review of Financial Economics*, 7, 579–595.
- Burkart, M., Lee, S., 2022. Activism and Takeovers. *The Review of Financial Studies*, 35(4), 1868–1896.
- Corum, A.A., Levit, D., 2019. Corporate control activism. *Journal of Financial Economics*, 133(1), 1-17.
- Denes, M.R., Karpoff, J.M., McWilliams, V.B., 2017. Thirty years of shareholder activism: A survey of empirical research. *Journal of Corporate Finance*, 44, 405-424.

Gantchev, N., 2013. The costs of shareholder activism: evidence from a sequential decision model. *Journal of Financial Economics*, 107, 610–631.

Giannetti, M., Kahraman, B., 2018. Open-End Organizational Structures and Limits to Arbitrage. *The Review of Financial Studies*, 31(2), 773–810.

Greenwood, R., Schor, M., 2009. Investor activism and takeovers. *Journal of Financial Economics*, 92, 362–375.

Klein, A., Zur, E., 2009. Entrepreneurial shareholder activism: hedge funds and other private investors. *Journal of Finance*, 64, 187–229.

Krishan, C.N.V., Partnoy, F., Thomas, R.S., 2016. The second wave of hedge fund activism: The importance of reputation, clout, and expertise. *Journal of Corporate Finance*, 40, 296-314.

Levit, D., 2019. Soft Shareholder Activism. *The Review of Financial Studies*, 32(7), 2775–2808.

8. Appendix

Table A1. Definitions of Independent Variables

The following table is a list of the independent variables used in our empirical analysis and where the data was sourced from.

Variable Name	Definition
VIX	The latest closing price for the VIX in the previous month before the activist engagement. <i>Source:</i> CBOE (www.cboe.com/tradable_products/vix/vix_historical_data/)
Bond spread	Calculated as the difference between the Moody's seasoned Aaa Corporate Bond Yield (www.fred.stlouisfed.org/series/AAA) and the Federal Funds Effective Rate (www.fred.stlouisfed.org/series/FEDFUNDS). <i>Source:</i> FRED
PE Ratio	The cyclically adjusted price to earnings ratio (CAPE), Rober Shiller calculates this as the inflation adjusted price level of the S&P 500, divided by the average of the last 10 years inflation adjusted earnings of the S&P 500. <i>Source:</i> Robert Shiller (https://shillerdata.com/)
Value-weighted market return	The value-weighted market return excl. dividends <i>Source:</i> CRSP monthly index file on the S&P 500

Table A2. Campaign Objectives

Our data source, S&P Capital IQ, identified 29 unique objectives, which we subsequently grouped into six categories: Corporate Governance, Engage Management, Business Strategy, Recapitalization, Block Merger, and Takeover or Propose Sale. Each classification was determined manually by reviewing and analyzing a representative sample of each objective. The final categorization is outlined below:

Campaign objective	Capital IQ classification
Corporate governance	Board matters, executive compensation matters, amend by-laws, takeover defense matters, voting matters, legal matters – breach of fiduciary duty
Engage management	Discuss issues generally regarding undervalued stock, maximize shareholder value
Business strategy	Change in business strategy, improve operational performance, vote against corporate operational proposal, propose cost saving measures, financial/overall performance of the target
Recapitalization	Distribute special dividends, implement share buyback program, liquidity needs, reinstate dividends, eliminate dividends, bankruptcy event
Block merger	Oppose against merger or combination, oppose against offer accepted by another company, oppose against acquisition, pressure target toward a M&A, withhold votes to business combination or merger
Takeover or propose sale	Pressure target to liquidate, pressure target to sell company and make a tender offer to acquire company

Table A3. Campaign Tactics

Our data source, S&P Capital IQ, identified 9 unique tactics, which we subsequently grouped into three categories: Confrontational, Moderate and Non-confrontational. Each classification was determined manually by reviewing and analyzing a representative sample of each objective. The final categorization is outlined below:

Campaign tactic	Capital IQ classification
Confrontational	Legal proceedings, takeover bid, proxy fight/contest
Moderate	Threat to launch lawsuit, threat to launch proxy fight, vote/no withhold votes
Non-confrontational	Non-confrontational communication and engagement, non-confrontational request for board representation, shareholder proposals

Table A4. VIX Quartile Split Values

VIX Quartile (Q4 = highest)	Min	Max
Q1	9.51	13.59
Q2	13.59	17.07
Q3	17.07	23.39
Q4	23.39	58.89