

# Activist Hedge Funds: Evidence from the Recent Financial Crisis

Zazy Khan\*

University of Verona,  
Department of Economics

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## Abstract

This study extends the empirical evidence of the impact of hedge fund activism on the targeted firm performance. I investigate whether activism strategies, as well as their effects, have changed following the recent financial crisis of 2007–2008. Using a sample based on the U.S. data covering 112 activist hedge funds targeting 551 publicly listed firms from 2000 to 2013, I find that returns to activism accrue approximately 5% during the  $(-20, +5)$  event window. Activism-related categories that generate significant and positive abnormal returns include capital structure, business strategy, and general undervaluation. Since the financial crisis, business-related activism generates the highest returns, followed by the activism in the financially depressed firms. I also find significant cross-sectional abnormal returns, both before and during the crisis, for hedge funds who do not prespecify an objective. The long-term post-activism performance suggests that targeted firms experience substantial improvement in value, profit margin, and investment.

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\*E-mail: zazy.khan@univr.it

# 1 Introduction

Despite the tremendous growth in the US hedge fund industry following the global financial crisis, merely a few studies have empirically attempted to gauge the effects of the crisis on fund-targeted firms.<sup>1</sup> The financial crisis, onsetting around mid-2007, undoubtedly challenged the traditional approach to activism: partly, due to losses incurred by activists investing in risky assets, and more importantly, with additional regulatory bindings. In addition, the crisis allows test whether there are any material changes in activist targeting patterns and ways to influencing the firm's internal governance. This study examines the impact of the recent financial crisis on the targeted firms' performance and investigates whether there is any paradigm shift in approaches to activism.

In their seminal study, [Berle and Means \(1932\)](#) posit that dispersed shareholders with negligible ownership stakes in sizeable US corporations less likely to assert any significant influence through monitoring. Modern corporate finance literature introduces distinct mechanisms to keep an adequate due diligence on firm's management. The emphasis of such arrangements is on to align the manager's interests with those of shareholders to alleviate the associated agency issues. The empirical evidence, however, suggests that these measures have appeared less productive in mitigating the agency problems ([Baker et al., 1988](#)). Of these monitoring means, the inclusion of blockholder is proposed on behalf of diffused shareholders ([Jensen, 1986](#)). The evolved outcomes have been economically insignificant, however, ([Wahal, 1996](#); [Karpoff et al., 1996](#); [Black, 1998](#); [Carleton et al., 1998](#); [Romano, 2001](#)). The limited role of such monitoring has been subjected to free riding ([Shleifer and Vishny, 1986](#); [Black, 1998](#); [Kahan and Rock, 2007](#); [Partnoy and Thomas, 2007](#)), high cost ([Black, 1998](#); [Kahan and Rock, 2007](#)), limited investment ([Black, 1998](#); [Karpoff, 2001](#); [Parrino et al., 2003](#)), weak financial incentives ([Rock, 1990](#)), regulatory constraints ([Romano, 2001](#)), conflict of interest ([Davis and Kim, 2005](#)), among others.<sup>2</sup>

The activist hedge fund has successfully drawn considerable attention from both academia and industry through its effective monitoring and by delivering substantial performance. Prior studies argue theoretically for its very organizational structure, including fewer regulations ([Ackermann et al., 1999](#)), relaxed taxations ([Jaeger, 2003](#)), sophisticated investment strategies and tools including leverage, short selling, derivatives, and concentrated portfolios ([Partnoy and Thomas, 2007](#)), ([Jaeger, 2003](#), p. 133), and performance-based incentives ([Ackermann et al., 1999](#)) allowing it arguably to outperform other funds. Contrary to the limitations associated with non-hedge funds, a growing body of fund-related literature argues for its distinctive characteristics and presents it as a leading candidate in a monitoring role ([Bratton, 2006](#); [Briggs, 2007](#); [Kahan and Rock, 2007](#); [Partnoy and Thomas, 2007](#); [Armour et al., 2009](#)). Despite the

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<sup>1</sup>According to Hedge Fund Research, a leading hedge fund database, the assets under management in the industry have reached up to \$3.02 trillion at the end of the fiscal year 2016 for more than 14,000 funds, [1]<https://www.hedgefundresearch.com>

<sup>2</sup>These shortcomings or constraints have been widely discussed in non-hedge fund literature.

recent financial crisis which has caused one-third of the capital wiped off the markets, fund-related activism has persistently been generating positively significant abnormal returns for its investors (Becht et al., 2014).

Numerous studies on fund activism have empirically tested the market reaction to the activists announcement of acquiring stakes in a firm. These studies generally conclude that the stock market responds favorably, and as a result, generates positively significant abnormal returns (Klein and Zur, 2006; Brav et al., 2008; Boyson and Mooradian, 2011). In a pre-crisis sample study, Klein and Zur (2006) report 10.3% abnormal returns over a relatively longer (-30, +30) event window including the date of notification. In another study, Greenwood and Schor (2009) using long-horizon data (1993–2006), document 3.5% abnormal returns in 15 days. To add more evidence, Brav et al. (2008) show seven percentage points abnormal returns in excess of matching firms based on size/book-to-market/industry in (-20, +20) event window and find no reversal in prices in the succeeding year of activism. Recently, Becht et al. (2014) analyze stock performance across regions, including Asia, Europe, and North America, and report that the US market responds most to fund disclosures about 6.9% for (-20, +20) event window. The announcement related significantly positive abnormal returns have disseminated a strong message to the market participants to reconsider traditionally existing approach to investing.

The empirical evidence on the long-term performance of the targeted firms, however, is mixed and largely subjects to the sample frame and composition. In a seminal study, Brav et al. (2008) examine the changes in targeted firms operating performance two years in post-activism and show that firms have outperformed the matching firms in terms of profitability and payout when matched at industry/size/book to market value. In addition, they also find that at the governance level, targeted firms experience higher CEO turnover following the activism. Boyson and Mooradian (2011), using a relatively longer panel dataset from 1994 to 2007 document that targeted firms' value improved when measured using Tobin's Q over the course of activism. Moreover, targeted firms significantly reduced the cash surpluses thus showing the consistency in the widespread idea that activists reduce the agency costs of managerial discretion. Contrary to these findings, some studies report either adverse effects or no improvement in the targeted firms following the activism. Klein and Zur (2006), for instance, do not find evidence of improvement in firms' accounting measures of performance. targeted firms, instead, experience a decline in earnings per share (*EPS*), return on assets (*ROA*), and return on equity (*ROE*) in the succeeding fiscal year. However, post-activism targets' excess cash reduced substantially and distributed among shareholders as a dividend. The mixed findings on long-term effect along with significant abnormal returns in the short-run suggest that the shareholders perceive benefits to reducing agency costs of excess cash and short-term investments.

Using hand-collected data extracted from Schedule 13D filings for 112 activist hedge funds targeting 551 US firms over the period of 2000 to 2013, I study the impact of activism in two distinctive perspectives: in general, for the entire sample period, and in particular, for the crisis period. In so doing, I am specifically interested in to investigate the types of firms being targeted; valued or growth stock. Are there any visible changes in the targeting patterns following the crisis? How do activists impact the internal governance of the targeted firms? Does crisis affect the returns to activism? Do activists really create value in targeted firms in the long-run? Or how well the targeted companies fared under the fund activism? Some of these research questions have partly been discussed in the prior fund-related literature (Klein and Zur, 2006; Brav et al., 2008; Boyson and Mooradian, 2011). This study extends the empirical evidence on the activist value generation in general with a particular focus on the crisis effect.

The activist fund usually acquires significant ownership stakes to exert its influence strategically on a firm's management. In doing so, the fund normally targets firms with low capitalization. Targeting relatively a small-cap firm allows an activist to hold a large segment of the outstanding stock and induce pressure on management to consider their suggested measures in serious manners. In my sample, the characteristics of the targeted firms demonstrate that they are, on average, small and medium-sized. In addition, they resemble value stock: underperforming but possessing potential in price to reflect the true intrinsic value. However, targeted firms are financially profitable and operationally stronger than peers in the industry. Moreover, targeted firms are highly leveraged and hold liquid assets compared to matching firms. Prior documented studies, including Brav et al. (2008); Boyson and Mooradian (2011) report targeted firms with low market capitalization, being a value stock, and likely prone to the fund activism.

Activist approaches a firm with a prespecified plan of actions. On acquiring 5% or more ownership stake in a firm, an activist fund reports a mandatory file known as Schedule 13D to the Securities and Exchange Commission of the US. In the 13D notification, it usually identifies the firm stock as being undervalued and thus proposes vivid changes to the firm. Consequently, the targeted firms have been experiencing positive and constructive support from activists during activism. The fund's proposed interventions are perceived, in general, positively by the market, and as a result, stock price appreciates in short-run. I find that in short-run, target firms' cumulative abnormal returns exhibit 5.34% appreciation in stock returns in the longest (-20, +5) event window, which is in line with previously documented studies on fund activism.

I examine the market reaction to various types of activism and analyze the cross-sectional distribution of the short-run abnormal returns. I find that market appreciates more the intervention by an activist suggesting changes to the capital structure in a target. The announcement-related returns (12.2%) accrue to activism in which a fund initially proposes to reduce the firm's excess cash in an attempt to mitigate the agency-

related issues or repurchases of outstanding stocks and restructuring of the debts. This finding is intuitive with the crisis period and offers an explanation of the proposals on targeting financially distressed firms. Following restructuring capital in firms, funds who manifest to change the target firms' business course, including operational efficiency or to gain favorable terms in mergers and acquisitions deals, manage to earn 9.2% returns in excess of the matching sample firms. In addition to the gains on these propositions, a fund filing 13D without a prespecified plan yields 2.8% returns, which indicates that regardless its anticipated role, market yet considers the activist involvement as a positive signal for the target. I do not find a meaningful reaction of the market to the type of activism which relates to the sale of the target. In the wake of the financial crisis, spinning off some non-core asset or whole firm is seen as the norm for fund activism. However, I do not find any statistically significant impact for such activity. The type of activism associated with governance issues, including ousting existing CEO or restructuring board of directors, generates positive returns. However, I find once again a lack of statistical significance. In sum, the market appreciates more a funds prespecified plan as compared to a passive approach.

Since the financial crisis, the business-related activism promises the highest returns by approximately 15% which is statistically significant at 5% level. Funds, suggesting measures improve operational efficiency which may include restructuring of business or be recommending appropriate terms for anticipated mergers and acquisitions during the crisis, generate highest returns. Another notable finding is a positive market reaction to those activists engaging in financially distressed firms suffering from lack of liquidity or by other reasons induced by the crisis. Targeted firms, filing for bankruptcy in courts under the Chapter 11 during the crisis, appeared potential venue to generate abnormal returns by about 10% merely marginally significant, however. In a relatively shorter (-10, +10) event window, funds without any intent of offering active role, earn more than 9% which is highly significant. Unlike previously gained results, I do not find any statistical significance for the abnormal returns for capital structure-related activism.

While analyzing the long-term performance of the targeted firms, I use two distinctive approaches known as propensity score matching and difference-in-difference approach on both dimensions: time-series and cross-sectional settings. The initial findings for entire sample period suggest that targets outperform their matching sample firms in terms of valuation, profitability, and investment. One year after activism, targets experience substantial improvement in Tobin's Q, also supported by the book-to-market value for which the difference in median observation is statistically distinguishable from zero. I also find that targeted firms partly reduced their leverage. Overall, the results are consistent with the documented literature and support the view that fund suggested measures in targets lead the stock price to reflect its fundamentals and thus help enhance the firm value in long-term.

The targeted firm's long-term performance yields mixed results when I account for crisis effect in the analysis. Using difference-in-difference approach, I examine the crisis impact on firm's performance for the entire sample and a subsample of firms targeted during 2006 and 2007. For full sample analysis, while controlling for crisis effect, I find that the proxies used to measure size, valuation, and investment exhibit a significant increase. However, targeted firms suffer in terms of profit margin with an increase in existing debt level. For a subsample of firms targeted during 2006 and 2007, the two years long-term performance in 2008 and 2009, demonstrate that the firms, on average, experience an increase in profitability and investment in the first year post-activism. However, in the second year of activism, I find significant fall in dividend yield and investment.

The study contributes to the existing literature on several fronts. It primarily addresses the fundamental question of the empirical evaluation of hedge fund's activism on the targeted firm's performance and attempts to explore whether activism strategies, as well as their effects, change following the financial crisis of 2007-2008. A growing body of literature has been testing the link between hedge fund activism and target firms performance in short-run and long-run empirically. [Brav et al. \(2008\)](#); [Clifford \(2008\)](#); [Klein and Zur \(2006\)](#); [Becht et al. \(2010\)](#); [Boyson and Mooradian \(2011\)](#); [Bebchuk et al. \(2015\)](#). However, these studies examine merely pre-crisis period (except ([Bebchuk et al., 2015](#))), when markets were normal, and fund activism was widely appreciated. The recent financial crisis offers an ideal setting to test the effectiveness of fund activism particularly when market conditions are unfavorable, and activists are challenged with liquidity shortage with additional regulatory constraints.

Prior studies have overlooked an acute issue existing in the activism-related research: sample selection. These studies conclude that activists target firms randomly ([Brav et al., 2008](#)). The characteristics of targeted firms, however, rather suggest that firms are typically financially and operationally strong with excess cash before being targeted. Thus, critics raise a fundamental question on firms post-activism performance and argue that targeted firms improved performance be arguably subject to funds ability to good stock picking rather fund activism. I argue and show that, on the contrary, firms are targeted not randomly but based on certain observable features. Thus, this study highlights the inherent issue of selection bias in activism-related literature. The analysis of firms' characteristics in the year before activism evidently supports this argument suggesting that targeted firms are small-sized, cash-rich, profitable and highly paying out compared to their matching peers. Hence, to mitigate the potential issue of endogeneity occurring because of possible sample selection bias, I use propensity score methodology. Using matching approach, I compare each target with controlling firm and estimate the probability of being selected for activism.

In addition, activism-related studies have been analyzing a limited sample period.

Brav et al. (2008) consider five-year sample from 2001 to 2006, and Klein and Zur (2006) use sample from 2003 to 2005. Contrary to them, however, Boyson and Mooradian (2011) analyze a longer panel of twelve years between 1994 to 2006. In a recent study, building on Brav et al. (2008) dataset, Bebchuk et al. (2015) use a sample starting from 1994 to 2007, adding some observations from the crisis period, and examine the long-term performance of targeted firms. It is important to note that hedge fund industry has witnessed a surge in the early 2000s, and in particular in the post-crisis period, allowing a broader frame to explore insights. In adding more to the ongoing debate on fund activism, I consider a longer panel spanning over 14 years from January 2000 to December 2013. The uniquely hand-collected dataset in this study permits to analyze two important elements: first, to examine the strategic patterns of targeting, which might have evolved over the activism period, particularly following the crisis, and second, whether fund activism proved as an effective source of generating value particularly when markets conditions were unfavorable.

In evaluating the targeted firms' performance, prior literature commonly reports the criteria comprising of industry classification, size, and book-to-market value. The documented studies have largely benefited from the Fama-French sorted portfolios based on two-digit SIC codes, 5 x 5 size, and book-to-market value (Klein and Zur, 2006; Brav et al., 2008; Boyson and Mooradian, 2011). In an unusual case, Klein and Zur (2006), alternatively, use a sample consisting of firms targeted for activism by non-hedge funds. This study shares a common feature with previous research by employing two-digit SIC codes, Fama-French 25 size, and book-to-market portfolios in addition to a sample of firms targeted by the similar set of hedge funds but for passive investment. Using a sample extracted from Schedule 13G filings allows gain insights into the activist's strategic choice of targeting a firm and predictable potential outcome associated with the activism. Moreover, the differential effect in the market reaction explains how the market perceives the presence of activist in an active target vis--vis passive target.

The rest of the paper proceeds in the following way: Section 2 discusses the formation of the sample. Section 3 presents the summary statistics on fund tactics and the targeted firms' characteristics. Section 4 presents the short-run analysis. Section 5 evaluates the impact of activism in the long-run. Section 6 examines the impact of the recent financial crisis on accounting performance of target firms in the long term. Section 7 using different specifications analyzes the sensitivity of the results, and finally section 8 concludes the paper.

## 2 Data collection and variable construction

### 2.1 Hedge fund sample

Primarily, I obtained a sample of 200 hedge funds from Barclayhedge.com (private) database. Of this, I excluded funds operating from outside the U.S. Moreover, the

funds investing in equities under various categories including global macro, global, event-driven, market-driven among others were shortlisted. To this sample, I add more funds found in fund-related studies, online, and financial press. A list of approximately 500 randomly chosen funds was constructed. In order to further diversify and enrich the sample, I perform a search test in the Securities and Exchange Commission's EDGAR with the first name of the fund in my list to retrieve additional funds. The process helped add more funds to the list which precisely marked about 800 activist hedge funds. From these 800 funds, I dropped a large number of funds functioning as arbitrageur or taking positions for short period trading purposes. The process of scrutiny left the initial sample to 127 funds involved in activism. To mitigate potential selection bias possibly induced by size, previous filing record, performance, and characteristics of fund managers, I control for all possible factors.

At next stage, I search for fund filing record in EDGAR system from January 2000 to December 2013. Fund usually reports several mandatory files during the period, it operates. When a hedge fund acquires 5% or more ownership stake in a publicly listed firm with intention to intervene in the business course of the firm, it reports a mandatory file known as 13D within ten days to the SEC of the U.S. under the "Securities Exchange Act of 1934."<sup>3</sup> The Schedule 13D indicates the filer as an activist and provides the details about filer's name, the issuer name and identity as an asset class (bank, money manager), the number of total shares outstanding, and form (ordinary vs. preferred stock), payment methods and related costs, the purpose of transaction, filer holdings in total outstanding shares, and other necessary documentation in the course of transaction's proceedings.<sup>4</sup>

The Schedule 13D discloses essential information about filer's identity. Item 2 titled as "Identity and Background" describes the reporting person's business address and type, the record about filer legal status, if any, criminal and civil proceedings in the last five years. However, it does not identify whether filer is a hedge fund or non-hedge fund. Thus, to clarify uncertainty about filers position, I went through each fund's personal website thoroughly and verified it with Factiva and other related websites. During this systematic search process, some funds were found offering services simultaneously for hedge funds as well as for private equity. I traced the parent investment company managing the fund and checked for its identification. If the filer parent firm is found a non-hedge fund asset management firm, I simply excluded it. For example, Deephaven Capital Management LLC manages hedge funds along with fixed income securities and

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<sup>3</sup>The Schedule 13G is a mandatory disclosure statement for the persons subject to Section 13(g). The qualified institutional investor is required to meet two core elements. First, the institution must have acquired the ownership stake in an ordinary course of business and not with the purpose of influencing the control of issuing authority. Second, the issuing authority must belong to a specific regulatory institution e.g. bank, insurance firms, saving association under Federal Act, registered investment bank among others. The filer of 13G is required to report within 45 days of the end of the calendar year in which the beneficial owner holds more than 5% or within ten days of the end of the calendar year in which filer holds more than 10% ownership stake.

<sup>4</sup>Schedule 13D and other filings can be downloaded through EDGAR filings search on [1]www.sec.gov.



private equity funds. I contacted the fund by email to make sure it primarily functions as a hedge fund.

Using EDGAR to retrieve 13D filings could induce size bias in the sample. In an attempt to influence target firms internal governance, activist accumulates a meaningful stake in the firm which essentially requires investing a substantial part of its holding capital. However, some activist funds have engaged in firms with stakes less than 5%, and thus do not appear in EDGAR's filing system. For example, Sandell Asset Management after acquiring merely 2% stakes in JDS Uniphase Corp. urged the target to consider a proposal of divesting some subsidiary asset. Following this proposal, JDS announced its plan by stating "this is a strategy our board has been actively considering for some time, ..." The effectiveness of proposal was manifested shortly it came out due to the fund's reputation and its active role in another firm namely Bob Evan Farms Inc., in which it acquired four board seats and pushed the firm to spin-off non-core assets.<sup>5</sup> These events account for a significant portion of the fund-related activism and are largely overlooked. I gather information on such events using various sources including financial press and related websites.<sup>6</sup>

After filing initial 13D, activist fund keeps reporting changes, which is known as amended file (13D/A- hereafter). The 13D/A provides the updates on contemporaneous issues which activist develops with the target firm. In addition, these 13D/As exhibit the period an activist holds the stakes in firm. I also find a small number of cases in which after filing initial 13D the amended files are not reported. A notable example is Del Mar Asset Management, LP. On November 16, 2009, it acquired 5% stakes in Kennedy-Wilson Holdings, Inc., and reported 13D to SEC. However, to follow the progress on this specific case, I do not find the 13D/A in EDGAR's system. Thus, all such cases are not considered.

A systematic procedure of multiple cross-checking and scrutiny left the sample with 112 US activist hedge funds. In comparison with [Brav et al. \(2008\)](#) sample, who analyze 236 hedge funds from 2001 to 2006, I investigate the activist events spanning over 14 years from 2000 to 2013. The sample composition in terms of activists' distribution appears similar to [Boyson and Mooradian \(2011\)](#) study who examine 111 activist hedge funds owned by 89 hedge fund management firms during 1994 to 2005.<sup>7</sup> Table 3 presents

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<sup>5</sup> [1]<http://blogs.wsj.com/moneybeat/2014/09/10/activist-sandell-urged-jds-to-explore-options/?KEYWORDS=hedge+fund+2+equity+stake>.

<sup>6</sup> Unlike private equity, activist hedge funds have been appearing successful in influencing firms managerial decisions by acquiring even less than 5% ownership. In offering active role with limited ownership, activist occasionally proposes its agenda to inclined but reluctant large shareholders including pension funds, mutual funds, private equity funds, and more possibly with other hedge funds with whom they can find common grounds. Thus, activist leads the campaign on behalf of other institutional shareholders by dividing the monitoring cost proportionately. [1]<http://business.financialpost.com/2014/11/15/how-activist-hedge-funds-on-steroids-have-become-a-boardroom-enemy/>

<sup>7</sup> How well my sample is diversified and representative of the industry? According to global research firm Preqin [1]<https://www.preqin.com/>, currently more than 400 activist hedge funds functioning worldwide. Of these 400 active funds, 60% are US based thus comprising 240 funds from which I assemble the sample with 112 activist funds (47%).

the distribution of the activist funds over the period of 2000-2013. An overview of the sample depicts the fluctuating trend. The number of activist funds on average do not vary from 2002 to 2005, however, just before the crisis and in following years, an increasing trend is observed. Table 2 provides details about activist funds and their targets. Out of 760 fund and firm pairs (repeated in some cases), there are 688 firms uniquely targeted by 112 funds. On average, an activist fund targets six firms over the sample period. However, some funds (e.g. Harbinger Capital Partners Master Fund, Carl Icahn C, Jana Partners LLC, and VP Partners LLC, among others) engage exceptionally about in 20 firms.

## 2.2 Target firms sample

From a comprehensive list of 760 Schedule 13D events, I retrieved 688 firms which were targeted by 112 activist hedge funds over the period of January 2000 to December 2013. In 9% cases (760-688), firms were targeted repeatedly in a similar month, therefore, to avoid repetition in analyses due to overlap in events, I dropped the firm occurring twice. However, I strictly considered the purpose of a transaction for which the firm was targeted. While identifying the codes in Thomson Reuters Datastream, around 20% firms were reported missing from the database, thus were not included in the sample. Finally, a sample of 551 US publicly traded at *NYSE/AMEX/NASDAQ* exchanges was assembled. I extract data on stock prices and for annual accounting and financial figures from their balance sheets, income, and cash flow statements, respectively. Stock prices are daily and monthly based and start prior to January 2000 to December 2013. Table 1 provides in details the definition of variables used in the analysis.

During the course of activism, activist interacts frequently with the targeted firm by engaging in corporate activities and thus reports necessary amendments to SEC. These amended files reveal the activist's consideration about the firms contemporary performance and its strategic plans regarding future policies. I find that in a majority of such cases, the activist demands a formal meeting to communicate on a general business course or other related investment possibilities. However, sometimes it proposes some radical changes which may include displacement of CEO, restructuring of the board, review of anticipated mergers and acquisitions (M&As -hereafter) deals, and corporate and governance matters. In order not to miss any important information, I go through these amended files and gather all qualitative information on relevant items. In the case of a noticeable change to already submitted 13D which may include the formation of a new board or intervention in suggested (M&As) deal to improve terms, the amended file would be considered a separate case. However, earlier studies show that these follow-up events remain insignificant to the overall results (Greenwood and Schor, 2009). In this sample, 3500 amended files out of total 4260 (6 amendments per initial announcement) constitute about 80% of the total sample.

## 2.3 Matching firms sample

To evaluate the actively targeted firms' performance, I extracted a sample of firms targeted for passive investment and reported in Schedule 13G filings by the similar activist funds for which I collect 13D files from 2000 to 2013. From 13G files, I gather all relevant information including firm name, the percentage of holding to total ownership, and type of shares (common versus preferred stock). Unlike 13D, 13G announcement is distinctively exempted from several clauses to report.<sup>8</sup>

I extracted 955 firms from 13G filings reported by 112 activist funds from January 2000 to December 2013. To collect data from Thomson Reuters Datastream, I used DS Mnemonic Codes as Identification. For a small number of firms, which constitute approximately 6% of the entire sample, I did not find codes and dropped them from the sample. For the rest of 898 firms, I extracted data on daily and monthly stock prices and annual accounting figures from using Datastream. All matching firms are US-based and listed at *NYSE/AMEX/NASDAQ* exchanges.

## 2.4 Crisis definition

For the analyses of daily and monthly stock returns, I divide the data broadly into two sub-groups. For the period before the crisis, it starts from January 2000 to July 2007, and for the period during and after the crisis, it begins from July 2007 to December 2013. For the annual accounting analyses, I consider data from 2007 and onward.<sup>9</sup>

To evaluate stock returns, I measure crisis by employing a dummy variable which takes value one, if a 13D is filed from July 2007 and ends at 2013. In a similar way, for accounting analyses, crisis is equal to one, if a 13D is reported in the year 2007 and onward. Some recent studies analyzing the crisis effect have been using a similar definition (Maier et al. (2011); Ben-David et al. (2012); Becht et al. (2010)). In the sample, one-third observations fall in the period following the financial crisis.

## 2.5 Event definition

An activist event is defined as when an active fund acquires 5% or more ownership stake in a publicly listed firm with an intention to influence firm's internal governance by a well-stated plan of objectives. The activist, upon reaching a threshold of 5%,

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<sup>8</sup>In some cases, an activist initially reports 13D to the SEC, however, later on, it changes to 13G depending on investment strategy.

<sup>9</sup>The crisis in the sub-prime sector which spread out early 2007 subsequently trickled down to the financial institutions including banks, holding companies, investment banks, and brokerage houses in the mid-2007. Economists generally agree that the recent financial crisis started as early as July 2007 up until December 2009. Maier et al. (2011) define the crisis by stating "at the end of June 2007, hedge funds of the investment bank Bear Stearns, which had invested overwhelmingly in the sub-prime mortgage market, were among the first to struggle." ('Bear Stearns says battered hedge funds are worth little,' New York Times, July 18, 2007., [1][http://www.nytimes.com/2007/07/18/business/18bond.html?\\_r=0](http://www.nytimes.com/2007/07/18/business/18bond.html?_r=0)

is required to report a mandatory file known as Schedule 13D to the SEC of the US within ten days. I gather announcements dates in two ways; first, the day when an activist acquires ownership stakes prior to disclosing to the SEC, second, in the case of unavailability of first reported date, I consider the date available with the SEC.

### 3 Summary statistics of activism-based events

#### 3.1 Hedge fund intention towards target

Table 3 exhibits the distribution of hedge funds over the period of 2000–2013. Interestingly, the number of funds does not vary significantly though relatively a small degree of a spike is observed in the closing years of financial crisis. Table 4 delineates the chronological distribution of the events over the sample period. Each event represents a Schedule 13D filing whether it is several times filed by an individual fund or separately filed by different funds. An overview of the figures reveals that there is a steady growth in activism events prior to the on-setting of the financial crisis. The overwhelming majority of the events take place during early 2000 and before financial crisis which is consistent with pre-crisis events' distribution documented by Greenwood and Schor (2009) and Boyson and Mooradian (2011). A potential factor for the significant increase in activist events is well motivated by Greenwood and Schor (2009) by arguing that hedge funds might have replaced the role of pension and mutual funds once occupied in the 90s and early 2000s. Another reason could be the expansion of the hedge fund industry in post-2000s when the investment was comparatively better rewarded by fund-related activism. A notable downfall in the events following the crisis is attributed to the outflow of capital from hedge fund industry and prudent behaviour of the investor (for detail, see, (Bolliger et al., 2011)).

In 13D form, a filer provides detailed information about the transaction. Item 5 titled "Interest in the Securities of Issuer" discloses information about beneficiary entity individually as well in a group, date of the transaction, number of stocks held by each beneficiary, if applicable, then share class (type A or B). Table 5 summarizes the percentage of the shares held by an activist and the related cost incurred to purchase. Out of 760 fund-firm pairs, for 733 events (more than 96%), I have details about stocks held by an activist. Mean ownership holding at initial filing is 13%, which is in line with Boyson and Mooradian (2011) reported figure. However, quantitatively (in dollar terms) it is many times larger than theirs reported figures which indicate that targets in this sample are much bigger in size. Regarding the fund's cost of purchasing stocks, the available information is limited to about 50% firms approximately. The average cost of the transaction for the threshold of 5% or above is about 77 million dollars.

The Item 4 titled as "Purpose of Transaction," in which an acquirer explicitly discloses the purpose of acquiring the stake. It allows us to know whether the activist finds the firm stock being undervalued at the moment or is required to be engaged with manage-

ment on collaborating on other business-related issues. Table 6 reports the qualitative information gathered from Item 4. To sort it out, I follow the patterns partly built by Brav et al. (2008) into seven different broad categories as general undervaluation or maximization of the shareholder value, capital structure, business strategy, sale of the firm, governance matters, financial distress, bankruptcy, and arbitrage.

Consistent with prior studies (Boyson and Mooradian, 2011) on activist targeting patterns, an overwhelming majority of cases, in two-third of the sample activists identified their targeted firms seemingly undervalued compared to their peers with potential to increase the market value by taking some appropriate measures. I also notice that a fund whether it files initially 13D or 13G always starts participating in the target firm by engaging with management with a central goal of value maximization. A significant majority of the cases exhibits that activists view the targeted firm current business strategy flawed and operationally inefficient, illustrated by an approximately 16 percent of the transaction purposes. A business course might involve restructuring, spinning off some noncore assets, blocking mergers and acquisitions or negotiating for better terms on a deal and alike. A reasonable proportion of events (11%) demonstrates that funds are concerned over poor governing issues in targeted firms. Acquiring a meaningful stake (5% or more) empowers the activist to obtain representation on the board and influence the incumbent management. Prior studies ((Brav et al., 2008; Greenwood and Schor, 2009; Boyson and Mooradian, 2011) provide a fair amount of anecdotal evidence from the industry. The aggregate of all events classified in table 6 exceeds the total reported events is due to non-mutually exclusively stated goals of the funds. Activists suggest multiple changes in targets simultaneously; for instance, an activist can involve in ousting CEO along with spinning off some non-core asset. Thus, in such cases, each statement is placed in a different type of activism.

### 3.2 Hedge fund techniques to influence the target

Activist employs various techniques by which it influences the target firm at the initial level of activism. I order these tactics, obtained from Item 4 of 13D, according to the course of actions. 1): Activist conducts a preliminary meeting with the firm management to gain insight on the current business situation.(53.6%). 2): A considerable majority of activists seeks to get board representation (12.25%). 3): A limited number of activist plans to appoint board nominees (2.24%). 4): The activist shows concerns regarding shares repurchase at a discount by blocking the anticipated managerial decision (2.24%). 5): Activist suggests target firm improve business course on the proposal of shareholders (8.56%). 6): Activist seeks the collaboration with other institutions or blockholders (5.40%). 7): Activist compels the target firm to restructure business (9.09%). 8): Activist plans to start a proxy contest against targeted firm planned merger and acquisition deal (4.08%). 9): Activist legally sues the company in bankruptcy court (2.24%). 10): Activist completely buys out the firm or merge it with

another target firm (1.58%).

### 3.3 Characteristics of targeted firms

What types of firms are targeted for activism? I investigate the characteristics of the targeted firms in the year before activism to explore potential determinants in activist decision making about acquiring stakes for activism.

Following activism-related literature (Brav et al., 2008; Boyson and Mooradian, 2011), I employ two distinctive approaches to evaluate the characteristics of targeted firms by comparing them with a matching sample in the year before activism. First, I compare them based on size, book-to-market value, and industry classification. To do so, I sort out all targeted and non-targeted firms on 2-digit SIC industry codes. The non-targeted firms, which do not match with targeted firms on 2-digit industry codes are dropped from the sample. For each target firm, at least one matching firm is found. At next stage, I choose the non-target firms whose market value fall between 70% to 130% of market value of the targeted firm a month before being included in the sample. I exclude the firms with missing observations. Finally, I compare the book-to-market of non-targeted firms with closest of targeted firms. Thus, a continued process of matching and scrutinizing reduces the sample by 52%.

Table 8 exhibits the summary statistics of the characteristics of the targeted firms in the year before activism. I report mean, median, and standard deviation of both targeted and matching sample firms. To mitigate any non-normality which may arise because of an outlier in variables, I follow earlier empirical research (Boyson and Mooradian, 2011) and winsorize all variables at the threshold of 1%. The last two columns report the Wilcoxon signed-rank test for the difference in the medians between targeted firms and matching sample firms. All figures are annual and retrieved from using Datastream. I compute the proxies for firm size, operating, financial performance, debt capacities, profitability, investment, and valuation.<sup>10</sup>

To demonstrate the significance of average differences in the characteristics of the target and matching sample firms, I report the difference in medians. Brav et al. (2008) motivate the use of median difference by arguing that Wilcoxon sign-rank test exhibits asymptotically normal distribution and provides better statistic in situations when variables largely display fat tails in their distributions. Column 8 reports the p-values for the difference in medians.

Starting with the firm size, proxied by market capitalization, the median difference between the target and matching sample is approximately negative 13 million dollars, but insignificant. I examine whether it is in-line with earlier documented figure on firm size. To investigate, I gather qualitative information from 13D (section 5 & 6), on firm

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<sup>10</sup>Table 1 provides the definitions and computation of values.



transaction size and total outstanding shares. I find that on average (median), a fund holds 46.1 (9) million shares in a firm, which constitutes a mean (median) percentage of 13.3 (7.75%) of total outstanding shares. The cost incurred by each transaction, on average (median), is 77.7 (16.1) million dollars. Thus, this information provides enough evidence to the typical notion of a fund acquiring a substantial stake in the target by spending a significant amount of its portfolio capital. However, it is also consistent with the idea that hedge funds normally do not target big firms, for which they need to spend a large part of their capital. [Brav et al. \(2008\)](#) argue that acquiring a significant size in a large firm may induce the idiosyncratic portfolio risk for the fund.

Firm valuation, measured by Tobin's Q, is significantly higher than the matching sample firm by 0.78 points at 1% level of significance. In an unreported result, the book-to-market value is positive and exceeds the matching firm by 0.02 points and significant at 5%. These values clearly show that undervalued stock is highly prone to fund activism. Evidently, about 60% of the filers in this sample stated in 13D 'Purpose of Transaction' that they targeted firms because of undervalued stock.

Related to firms' operational performance scaled at sales growth, return on assets, and profitability is strongly consistent with the documented figures. Return on assets, which is much higher for the target (0.029) than matching firm (-0.010), is differentiable significantly from zero. To obtain additional evidence from other measures, I examine the (sales) growth in target firms. Interestingly, the targeted firms outperform the matching firms by 0.03 points which is significant too at 5%. These results are in contrast with [Brav et al. \(2008\)](#); [Boyson and Mooradian \(2011\)](#), who document negatively significant difference in medians. Return on assets and growth coupled with profitability might explain the entire pre-activism targets performance. To assess the ex-ante target's profitability (measured as net income / net sales or revenues), I find that difference in medians is approximately 0.03 points which is marginally different from zero. In a nutshell, targets' operational performance portrays them attractive for fund activism.

In terms of debt capacities, the book leverage of target (matching), leverage, and market leverage is 0.29 (0.77), 0.27 (0.16), and 0.19 (0.06) and distinguishable from zero at 1%, 10% and 1% respectively. Except for book leverage, all other measures exhibit higher values than matching firms, consistent with the increasing trend in firms' leverage in the post-crisis period.<sup>11</sup> To look into the details, one can isolate the firms targeted in post-crisis period to examine whether the higher leverage is driven primarily by firms in ex-post crisis. These figures differ from [Boyson and Mooradian \(2011\)](#), who find that targeted firms have lower leverage value compared to their peers using data from the pre-crisis period. The differential effect could be attributed to the crisis. Some variation in leverage difference can be explained by Fed's new policy of quantitative easing, which led to an upsurge in firms increased borrowings. Summarizing the debt capacities, the

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<sup>11</sup>See e.g. R. Vincent. Leverage ratio surges at large companies. CFO.com, April 10, 2013.

targets are relatively leveraged firms. To examine whether the target firms are capital intensive and technology-centered, I assess their investment aspects. Capital expenditure and research and development are 0.01 (0.01) and 0.02 (0.01) respectively. Unlike [Brav et al. \(2008\)](#), the firms in this study spend relatively more than their matching firms in industry. To explore further the sources of deriving higher capital spendings, I look into the industry classification and find that 40% of the sample is comprised of firms belong to the manufacturing sector.

Activist funds pay particular attention to target firms' provision of liquidity and dividend policy. Firms holding excess cash and highly paying out likely increases the probability of being targeted by the fund. One of the key reasons among stated objectives provided in 13D is to distribute the excess cash in a firm. By doing so, fund attempts to achieve two goals; first, to mitigate any agency issue related with hoarding excess cash, second, to increase the payout for its shareholders. The median value (0.08) for cash in targeted firms is significantly lower than the median value (0.21) of matching firms, implying the low levels of cash in targeted firms. This finding is in contrast with earlier documented studies ([Boyson and Mooradian, 2011](#)), who find that matching firms, on average, hoard more cash than targets. Related to cash distribution in terms of payout policy, the median observations for both samples are zero. However, alternatively, I compute the test in a difference in averages. The dividend yield for target firms significantly differs from matching firms at 1%.

To assess whether crisis has affected the activist approach to activism by targeting specific types of firms, I analyze the characteristics of firms targeted in the year 2007 and onward. Table 10 presents mean, median, and standard deviation for targeted and matching sample firms for five years from 2007 to 2013. In comparison with table 8, which yields summary statistics for the entire sample, some results are interesting. A significant trend which emerges from the crisis period is that activists less likely target highly leveraged firms. The three measures of debt capacities, book leverage, leverage, and market leverage are no more significant (except ML which is marginally significant at 10%) in comparison with results exhibited in table 8 for the full sample period.

Summarizing the characteristics of the targeted firms by a set of conventionally defined ratios, the values illustrate that the activists target relatively small-sized, undervalued and financially profitable firms. The findings also hold with the prior documented studies which find that target firms are usually highly leveraged, investment oriented with good distribution policy.



## 3.4 Likelihood of fund–activism

### 3.4.1 Sample selection bias

In section 3.3, I examine the characteristics of targeted firms in the year prior to fund activism. By analyzing, I attempt to show whether differential effects between a target and a nontarget might explain the potential reasons for a firm to be targeted for activism. However, critics raise serious concerns over a fund choosing a firm by arguing that an activist likely targets financially strong and well-performing firm which can reflect its intrinsic value if firm’s fundamentals are aligned. Thus, critics accuse activists of picking good stock from the market and attribute the post-activism outperformance to right choice rather fund activism. It raises the underlying issue of selection bias primarily occurring because of observable firm characteristics and nonrandomness in targeting patterns. Earlier fund-related empirical research has paid inadequate attention to it.<sup>12</sup> It seemingly appears due to choice-based sampling, in which the activist chooses a potential target and not because of the analyst (see, e.g., Heckman (1979)).<sup>13</sup>

Given the non-random selection, the probability of being targeted for fund activism could be discussed using propensity score matching which has gained considerable attention in recent decades (Rosenbaum and Rubin (1983); Heckman and Navarro-Lozano (2004); Heckman and Vytlacil (2007)). Heckman and Todd (2009) propose propensity score approach to a setting in which members of the treatment group are over or under-represented about their frequency in the population. This study offers an ideal situation to employ propensity score matching since it considers the cases in which the activist files 13D upon acquiring 5% or more stakes and thus ignores all such potential cases where activism takes place with less 5% threshold. Hence, the sample based on 13D files under-represents the total volume of activism and requires to consider an atypical approach to measure the treatment effect.<sup>14</sup>

To employ propensity score approach to a setting where firms are targeted on some observable characteristics. Rosenbaum and Rubin (1983); Imbens and Wooldridge (2009)

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<sup>12</sup>Recently, Coffee Jr and Palia (2015) highlighted this issue by showing concerns over the formation of matching sample in evaluating activist performance.

<sup>13</sup>Heckman and Navarro-Lozano (2004) model this issue as an economic choice by considering two potential outcomes ( $Y_0, Y_1$ ).  $\delta = 1$  if  $Y_1$  is selected and  $\delta = 0$  if  $Y_0$  is selected. Activists pick their respective outcome based on utility maximization (which would be treatment effect in the case of choosing good target firms). Let  $V$  be a utility which is formulated as:

$$V = \mu_V(Z, U_V) \quad D = 1(V > 0)$$

Where  $Z$  is a vector of factors (observed by the analyst),  $U_V$  are the unobserved factors and determine choices, and 1 is an indicator function. Our emphasis is on two different information sets — information set which an activist has and based on certain observables— information set which an analyst has and restrained with information about activist’s choices.

Another reason for not likely considering the issue of selection bias in previous fund-related studies could be that researchers manually construct sample and thus presumably avoid any non-random sampling errors (Brav et al. (2008)).

<sup>14</sup>In later analysis, I examine the causal effects of fund activism on target firms.

propose matching sample strategy to encounter confoundedness.<sup>15</sup> It primarily allows to obtain the uniform distributions of target firms with matching sample firms and thus helps yield possible unbiased estimates. I begin to construct a vector of common characteristics in which targeted firms are matched with controlling firms to assess the probability of a firm to be a potential target. Prior literature on propensity score matching suggests using all concerned variables which may affect both treatment selection and the outcome (Austin et al., 2007). Thus, I include all possible characteristics which might explain the probability of a firm selection. At next stage, using a logit regression model upon multivariates in lagged period, I examine the probability of each covariate in explaining the variation in firm selection.<sup>16</sup>

Table 9 exhibits the effects of covariates on the likelihood of fund activism. I compare the sample of 551 targeted firms with 898 nontargeted firms based on propensity score matching. Using a logit regression setting, the dependent variable being dummy set to 1, if a firm is targeted in the year before activism. The independent variables include a vector of firm characteristics. To control for fixed effects, I include industry and year dummies. All variables are winsorized at 1%.

Table 9 reports the coefficients on the multivariate regression model. I discuss some key interesting results. The coefficient on market value is distinguishable from zero and partly explains the variation in the activist decision making whether to target the firm for activism. While targeting a firm, and empirical research suggests too, activist essentially takes into account firm size and uses the mode of activism which affects the firm governance in the immediate future. Firm valuation parameter, Tobin’s  $Q$ , is consistent with the result presented in section 3.3 and is in line with prior documented findings ((Brav et al., 2008; Boyson and Mooradian, 2011)). The coefficient on Tobin’s  $Q$  is negatively significant at 5% level of significance and interpreted as one standard deviation decrease in Tobin’s  $Q$  is associated with 0.55 percentage points increase in the probability of a firm being targeted by an activist. Regarding firms’ debt capacities, the coefficient on book leverage explains the cross-sectional variation in fund’s objectives when targeting a firm. For instance, one standard deviation increase in book leverage increases the probability of a firm being targeted with 0.58 points, if other things remain the same. Highly leveraged firms offer enough potential for activist to generate value through restructuring their debts.

The patterns emerging from logit regression are consistent with the non-parametric

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<sup>15</sup>This strategy is also known as nearest neighbour (NN) matching, based on treatment probabilities. The attractive feature for which Caliendo and Kopeinig (2008); Imbens and Wooldridge (2009) argue, is that it initially helps reduce bias rather than variance in estimates.

<sup>16</sup>In principle, any discrete model can be used to estimate the propensity score. The preference for logit or probit models is highly derived from the unlikeliness of the functional form when the response variable is highly skewed and predictions are outside the  $[0, 1]$  bounds of probabilities (e.g., see, Smith (1997)). For binary treatment cases, where we estimate the probability of target vs. nontarget — logit or probit models yield almost similar results, however, Caliendo and Kopeinig (2008) argue for logit model since it demonstrates more density mass in the bounds.

analysis in section 3.3, and suggest that activists in general target small-cap, undervalued and highly leveraged firms to generate value for its shareholders.<sup>17</sup>

### 3.5 Changes in targeting patterns during and after the crisis

Following the crisis, I seek whether there are any visible changes in the targeting patterns of fund-activism. One way to get insights on activists approaches to targeting could be to examine the post-crisis filed cases. To do so, I go through the 13D filings particularly Item 4 to obtain information about the activist purpose of the transaction. In addition, I gather updates on activist-target relations from the financial press. I focus on two aspects; first, following the crisis, what are those potential venues which are generally identified for value generation? second, given the restrained circumstances for liquidity, how does an activist manage its finances for activism?

To begin with, I decompose the sample by generating a dummy variable for the crisis, which takes a value 1 if a particular type of activism occurs during the crisis period ranging from July 2007 to December 2013. In table 6, the event summary is decomposed for the periods before and after the crisis into two separate panels. A comparative overview of panel B and C depicts an even distribution of the events. To test whether a specific type of activism is exercised relatively more following the crisis, I carry out the nonparametric analysis using Wilcoxon sign rank test for the statistical significance for a difference in medians in pre-and post-crisis period.

Targeted firms capital structure were the potential venues to evaluate and consider for activism. To begin with, I test whether capital structure-driven cases proportionate to the crisis. I find that the median difference between events in crisis period marginally differs than the events before the crisis. The table demonstrates that the post-crisis events account for 38% of the entire sample, and of them, 40% cases are filed intervening in the capital structures. This figure is economically appealing. Since the financial crisis, the targeted firms experienced high leverage and constraints in financing their businesses, thus appeared as promising targets for activism. In addition, I also find a significant change in targeting patterns toward firms governance. Board restructuring, displacing CEOs, and adjusting performance-based compensation were norms of the financial crisis. Moreover, the activists, less interested in intervening in firms business course are found distinguishably different than the pre-crisis period at 1% level.

Do firms targeted during and post-crisis period differ from the pre-crisis period? Table 10 examines such firms characteristics in the year before activism and provides results obtained from the nonparametric analysis targeted during 2007 to 2013. I report mean, median, and standard deviation of both target and matching firms. The last two

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<sup>17</sup>In an auxiliary tabulated result, I find that average probability of a firm being selected for fund activism is approximately 30%.

columns report the Wilcoxon signed-rank test for the difference in the medians between the targets and matching firms. The table presents proxies for firm size, operating and financial performance, debt capacities, profitability, investment, and valuation.

The firms targeted during and post-crisis appear smaller than their peers. The difference in medians between target and nontarget is negative 3.71 million dollars, which is distinguishable from zero at 5% level of statistical significance. Regarding valuation, the difference in medians for Tobin's Q is positive, 0.85 points and significant at 1%, indicating that following the financial crisis, activists targeted mostly valued stock. While measuring operational performance by net sales and sales growth, I find that targeted firms outperformed nontargeted firms. The median difference in net sales is approximately 163 million dollars, significant at 5%. During this period, targets' sales growth positively increased by 4%. However, the difference is not statistically significant. In addition, targeted firms hold less cash compared to their peers by 7% in the year before activism. I also find targeted firms paid high dividend yield prior to activism. Another findings is that targeted firms are relatively more leveraged in the year before activism as shown by market leverage ratio which is marginally significant at 10%.

To measure the conditional probability of each covariate in the firm selection, I compute the propensity score for each firm characteristic using logit p-score model within a year. To do so, I primarily begin with both samples for targets and nontargets from the year 2007 to 2013. Then I extract observations for firm accounting measures in lagged year before fund activism. To facilitate the matching procedure, I also include 2-digit SIC codes and year. To mitigate any possibility of outliers, I winsorize variables at 1% level. Of 551 targeted firms from 2000 to 2013, approximately half of them (263) fall during crisis period from 2007 to 2013. On the contrary, in nontargeted firms sample, roughly about 61% firms (545) constitute the crisis period. Thus, I find at a minimum, one matching firm for each target firm.

Table 11 presents estimates on targeted firms' characteristics in comparison with non-target firms using propensity score matching during the crisis period. An overview of the results depicts that propensity score helps obtain closed matches between two samples as shown by the differences between treated and control. However, using matching to reduce selection bias and differences may not hold for some characteristics; for instance, the difference between treated and control for ROA and R&D is exceptionally large enough to influence the treatment probability. To test the hypothesis whether targeted firms during the crisis do not differ (in characteristics) from matching sample firms, I use t-statistics using the pstest procedure in an untabulated result and find that target firms during crisis significantly differ from matching firms. Moreover, I also find that the average probability or propensity score for a firm to be a potential target for fund activism based on characteristics is 32%. I also observe that by excluding cash variable for which there are fewer observations in the sample, it increases to 38%. In

addition, the number of exact matches also varies due to the covariates used to measure the propensity score.

## 4 Fund activism and stock returns performance

### 4.1 Short-run announcement returns for targets

To measure the immediate reaction of the market to the activist’s announcement, I employ the event-study” approach. A longstanding literature has been empirically investigating the impact of corporate events on a firm’s stock price around the announcement dates using event study. A well-developed literature begins as early as [Dolley \(1933\)](#) study of examining the effect of stock split in nominal price. In the late 1960s, the seminal studies by [Ball and Brown \(1968\)](#), and [Fama et al. \(1969\)](#) introduce improvements, which provide the foundation for today’s methodology.

[Brown and Warner \(1980, 1985\)](#) examine the issues related to the violation of statistical properties in event studies methodologies. A key issue with daily stock returns is non-normality as identified by [Fama \(1976\)](#), and as a consequence, the distribution of daily stock returns tends to fat-tailed as compared to a normal distribution. [Brown and Warner \(1985\)](#) find similar evidence in excess returns by examining the properties of a small sample. To this particular problem, [Billingsley \(1979\)](#) proposes Central Limit Theorem and argues that if the cross-sectional excess returns in securities are drawn from independent and identically distributed samples from finite variance distributions, then as a result, distribution of mean excess returns eventually converges to normality as the sample size increases. The fact that non-normality exists in event studies, our sample size is large enough to rule out such problem.

Prior studies in fund-activism have been using event study approach to examine the effect of fund announcement on the target firm’s stock price around 13D notification dates (for details, see, ([Klein and Zur, 2006](#); [Brav et al., 2008](#); [Boyson and Mooradian, 2011](#))).<sup>18</sup>

Fund-related studies have been using event study approach to examine the effect of activist announcement of acquiring stakes on targeted firms stock price around 13D notification dates (([Klein and Zur, 2006](#); [Brav et al., 2008](#); [Boyson and Mooradian, 2011](#))).<sup>19</sup> However, the use of the event study approach in fund activism is critically viewed as it contrasts with the essence of methodology, which necessarily requires the event to be

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<sup>18</sup>In recent periods, the application of event study approach could be seen in various fields of Economics and Finance; In Financial Economics ([Brav and Gompers \(1997\)](#)), Accounting performance ([Bhagat et al. \(2001\)](#)), and Finance and Law ([Bhagat and Romano \(2002\)](#)).

<sup>19</sup>In recent periods, the application of event study approach could be seen in various fields of Economics and Finance; In Financial Economics ([Brav and Gompers \(1997\)](#)), Accounting performance ([Bhagat et al. \(2001\)](#)), and Finance and Law ([Bhagat and Romano \(2002\)](#)).

unpredictable by the market. In other words, the critics argue that fund’s announcement in target firm is a likely event, which is perceived well in advance prior to the disclosure of notification date. Thus, this approach subjects to misspecification. On the contrary, I argue that our proposed relatively a longer estimation window should induce all such information and as a result, the market reaction to the event date should be neutral. In addition, using market model based on 120 days of estimation window prior to fund announcement, market behaves normally with increasingly positive reaction to fund notification.<sup>20</sup> In addition, it is the activist, who evaluates the target and declares the intent to intervene in firm’s ordinary course of business which is entirely independent of market assessment. Thus, the market is most likely unaware of the fund’s announcement and unanticipated course of action.

In order to prevent the event being influenced by the normal performance, I construct an estimation window of 120 days, suggested by [MacKinlay \(1997\)](#). For each target firm, I extract the daily stock price of 150 days prior to the event date and restrict it to 30 days before the given filing or announcement date. An estimation window of four months or (–150, –30) 120 days will likely account for any nonlinearity in time-series patterns of stock returns.<sup>21</sup>

Building on the methodologies proposed by [MacKinlay \(1997\)](#); [Greenwood and Schor \(2009\)](#), I construct the initial setting as:

$$AR_{i\tau} = R_{i\tau}^{Target} - R_{\tau}^{Match} \quad (1)$$

Where  $R_{i\tau}^{Target}$  is (logarithmic) normal return on the target firm security and  $R_{\tau}^{Match}$  is the (logarithmic) return on the matching portfolio security. To compute abnormal return for each target firm, I use [Fama and French \(1993\)](#) well-constructed six valued-weighted portfolios formed on size, and book-to-market value. [Fama and French \(1993\)](#) three-factors include High minus Low (*HML*), Small minus Big (*SMB*), and market return factor.<sup>22</sup> I subtract each announcement observation in excess of the aforementioned factors to compute abnormal returns. Then these abnormal returns are aggregated through multiple time dimensions:

$$CAR_i^{\tau_1, \tau_2} = \sum_{\tau=\tau_1}^{\tau_2} AR_{i\tau} \quad (2)$$

I next test the hypothesis whether mean cumulative abnormal returns (CARs-hereafter) are different from zero or fund announcement has no effect on targeted firm stock price.

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<sup>20</sup>In later analysis, I show the patterns in market behavior by constructing multiple event windows to demonstrate that as soon as the market perceives the information content, it begins to discount all factors associated with the event and reflects in firm’s stock price around the announcement days.

<sup>21</sup>In this sample, a small number of targeted firms (approximately 6%) do not provide an array of stock prices for 150 days before the event date for certain reasons. For such insignificant cases, I generate surrogate observations by taking the average of closest period values.

<sup>22</sup>Data on portfolios formed on size and book-to-market can easily be downloaded from [1]Fama-French website.[[http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)]

To test whether these abnormal returns are statistically significant, I use standard Z-test.

To examine the immediate market reaction to funds acquiring stakes in firm around the announcement days, I construct multiple event windows of different lengths. Figure 1 plots mean CARs for targets over the longest event-window of  $(-20, +5)$  or 26 days. The evolving pattern of returns show unnoticeable movement in early days which eventually descends when approaching notification date. However, as soon as market perceives the activist presence presumably, a positively significant response emerges from the market. The US stock market, being well informed and highly liquid, swiftly accommodates the news by discounting the activists anticipated measures in firms stock price. An equally important question arises to what degree market reacts to the transaction or simply how much CARs in aggregate could be realized. I observe a price run-up which keeps on rising sharply, and as a result, there is a realization of more than 5% CARs for 26 days event window. Figure 2 and figure 3 decompose the total CARs in pre-and post-crisis period to explore which part of the observations is mainly driving positive returns. Figure 2 clearly depicts that activist events in the pre-crisis period are well-rewarded by market by generating about 7% CARs. However, on the contrary, in the post-crisis period, positive CARs are realized merely one day before the fund notification which barely marks 3%. These results are in line with [Becht et al. \(2010\)](#), who find a sharp fall in CARs approximately by half (10.5% - 5.8%) over the period from 2006 to 2010. They argue for the significant shortfall due to the potential collapse of the takeover markets and liquidity during the crisis period.

There is a general consensus in fund-related empirical studies over the positive market reaction around activist notification of holding stakes. Thus, the short-run performance is consistent with prior findings. As [Brav et al. \(2008\)](#) document an aggregate of 7.2% buy-and-hold returns (*BHARs*) in excess of buy-and-hold returns on the value-weighted *NYSE/ AMEX/ NASDAQ* index over an event window of  $(-20, +20)$  or 41 days. Using a long panel from 1994 to 2005, [Boyson and Mooradian \(2011\)](#) report 9% to 11% for filing and event date respectively. In a recent study, [Becht et al. \(2010\)](#) examine market response to fund disclosure and report, for a relatively longer event window of 41 days, 6.9% abnormal returns. In an early study, [Klein and Zur \(2006\)](#) document some mixed findings. Their reported figures suggest ranges of CARs from 5.0% to 10.3% over multiple event windows when abnormal returns are computed by employing market index. However by changing matching criterion to industry/size/book-to-market, the size-adjusted mean returns appeared significantly negative.

To identify the early -10 days  $[-20, -10]$  effect, I break-up the event window to  $[-10, +5]$  days to capture the close impact of 13D filing on stock prices. Interestingly, there is no significant change in CARs. Table 12 illustrates the various event windows and subsequent CARs generated in each window. While analyzing the aggregate returns, it seems that a bulk of returns accrues just before the announcement date. The run-



up spike follows early days as depicted by (-10, +5) event window. We can observe a drastic change in trading volume in (-10, +5) event window generating 5.14% CARs in excess of the market returns, demonstrating an immediate outcome of acquiring a substantial stake in the target. However, post-announcement day scenario differs. I find that the CARs reduce approximately by half in (0, +10) event window, which signifies that market has adjusted all available information about the transaction volume and activist announced purpose of targeting the firm.

## 4.2 Types of activism and event-days abnormal returns

In previous analyses, enough light has been shed on how activist discloses the objective of the transaction in a 13D filing. These stated objectives are classified broadly into two types: active versus nonactive. Activists identify potential venues for improvement in targeted firm and specify a plan of action. I gather the qualitative information from 13D filing particularly in Section 4 “Purpose of Transaction” about the activist suggested measure and classify them into five widely well-defined categories partly following [Brav et al. \(2008\)](#). In this section, I examine the heterogeneity in market perceptions about fund’s particular type of activism and investigate which type of activism generates more returns for the activist by constructing a univariate setting:

$$CARs_i = \alpha_i + \beta_i Type_i + \epsilon_i \quad (3)$$

Where  $CARs_i$  present abnormal returns for firm  $i$  in aggregate form obtained from multiple event windows, and the only explanatory variable  $Type_i$  indicates the well-defined type of activism based on fund initially stated objective. [Table 13](#) explains the cross-sectional distribution of expected CARs accruing to various types of activism.

In [table 13](#), columns I to IV illustrate the regression results after regressing CARs of multiple event windows against the types of activism. Following earlier studies ([Boyson and Mooradian, 2011](#)), the estimated coefficients would be interpreted as the market reaction to each type of activism explicitly stated in fund’s purpose of the transaction. To control for potential unobserved heterogeneity in returns over time, I control for the target firm size, year and industry dummies. The long-term debt is expressed as the ratio of long-term debt to the aggregate of total debt and market value of equity. The model includes dummies for General Undervaluation, Capital Structure, Business Strategy, Sale of Target, Governance. I winsorize firm size and long-term debt at 1% level.

Since the model predominantly incorporates dummies, to facilitate the interpretation of the coefficients on dummy variables, I follow the practice of suppressing the intercept of the regressions as suggested in the activism related literature ([Brav et al. \(2008\)](#); [Boyson and Mooradian \(2011\)](#)). In addition, the nondummy variables, which include



the size of the target and long-term debt are demeaned and expressed in the form of deviation. As a result, the coefficients on dummies can be interpreted as the average effect of a specific group of type of activism on abnormal returns assuming that the targets demonstrate average characteristics.

Table 13 presents the effects of covariates on CARs of different event windows around the announcement of 13D. In column I, CARs obtained from longest (-20, +5) event window are regressed against the activism dummies, firm size, and the long-term debt. The returns to the activist intervening in targeted capital structure are likely justified in the wake of the recent crisis in which most of the firms were financially depressed because of imbalances in their capital structure. Next, activists announcing changes to target business strategy likewise restructuring or spinning off generate a mean CARs of 9.2%, which distinguishes from zero at 5% significance level. Activists with no prespecified purpose of the transaction are rewarded the least with a mean CARs of 2.8% which is marginally significant. We critically observe a pattern in returns arising from general undervaluation category showing that as the news of activist notification approaches to the announcement date, the returns gradually increase.

Given the non-mutually exclusive nature of the types of activism, an activist can generate aggregate abnormal returns by getting involved in different kinds of activism simultaneously. An activist, for instance, may suggest its initial objective review current capital structure, but later on, it may propose measures to improve firm's business strategy. Thus, the overall effect could cause to generate aggregate abnormal returns of 21.4% (12.2% + 9.2%). However, if these changes are presented at the beginning of the first filing, it is less likely to identify the source to which market reacts most. In table 13 column II, CARs from a relatively shorter (-10, +5) event window are regressed on the set of similar explanatory variables. As a result, the magnitudes of estimates reduce considerably, nonetheless remain persistently significant. I explain this differential effect in returns appearing from intervals in event windows as a market mechanism of discounting information well before an activist formal announcement. Columns III and IV explain it further by extending days in the post-announcement period and show how the coefficients on types of activism become gradually marginally significant. Summarizing the cross-sectional distribution of abnormal returns, I find that the market reacts remarkably to the foreseen changes in firms' capital structure and business-related activities and reflects an immediate positive response in stock prices. On the other hand, market persistently generates abnormal returns to the announcement of funds who merely engage with the firm's management on the regular basis and do not specify a particular course of action.

These results are in line with reported findings on the activism impact on returns. [Brav et al. \(2008\)](#) find that market reacts most by generating positively significant abnormal returns of 8.54%, to the activist intervening in the firm to divest a particular

segment followed by the activist engaging with management without any intervention. [Boyson and Mooradian \(2011\)](#) show that the activist fund putting up its agenda as to influence target governance is highly rewarded by price appreciation with a significant CARs of 38.5%. The remaining activism-motives other than governance, though generate positive abnormal returns but are not distinguishable from zero.

In sum, I may conclude that in the short-run market responds positively to the activist notification of acquiring stakes in the firm by generating abnormal returns. I also find that market discerns each type of activism distinctly different by discounting the information it receives and reflects into target stock price. The question of generating high abnormal returns subjects to level and degree of activism. In general, the findings in this study are consistent with the previous studies on the aspect of positive abnormal returns in short-run. However, the cross-sectional distribution of abnormal returns may be attributed to differently composed datasets and approaches to detect them. In addition, prior studies examining the market reaction to fund activism have been using a pre-crisis period sample, a distinguishable factor to be taken into account.

### 4.3 Crisis effect

#### 4.3.1 Abnormal returns around the announcement days in post financial crisis

To examine the crisis impact on fund activism, I revisit the model used in section 4.2 and incorporate the crisis dummy in it. In addition, I include non-dummies specifications, including the size of the firm and long-term debt. Both variables are demeaned and presented in deviation form. I regress dependent variable CARs on multiple event windows against dummies of activism, crisis dummy, and size of the firm. I control for industry and year fixed effects in all panels. To observe the mean effect of each type of activism, I suppress the intercept term.

Table 14 reports the regression results after incorporating the crisis dummy. The coefficient on the crisis dummy is significantly positive. Unlike results reported in table 13, the coefficients on stated objectives appear with mixed results (both positive and negative). However, quite surprisingly, none of the estimates is statistically significant across the event windows of multiple lengths. Our interest, however, lies in the central variable, i.e., crisis, which is positive and in part explains variation in abnormal returns. The market response to the activist's announcement, regardless of any specific objective, is illustrated by figure 3. It indicates the real effect by reflecting the downfall in returns during the crisis period around the announcement dates.

Table 15 revisits the model setting with interaction terms and reports the results for multiple event windows. The activist, proposing structural improvements in target ongoing business, earns most abnormal returns in the longest (-20, +5) event window.

This result is consistent with [Becht et al. \(2010\)](#) findings, who report that during crisis takeovers, M&A deals appeared to be a potential source of generating value. Following it, activists intervening in financially depressed firms gaining the most. Firms, operationally and financially weak were hardly hit by the recent crisis and thus sought assistance by filing cases to bankruptcy courts. Activists identified such potential targets and assisted them: by reorganizing business and restructuring debts with additional liquidity. Markets highly appreciated such efforts. However, about 10% CARs are realized marginally significant. In relatively shorter (-10, +5) event window, the coefficient on General Undervaluation shows significance which indicates that market is also responsive to the activists of acquiring stakes in the firm without any prespecifying plans. Activists without any prespecified stated objective earn more than 8% abnormal returns. This contrasts with the results reported in [table 13](#), which show that activists offering less active role are rewarded by 3.9% in the short-run. On the contrary, the net gain to nonactive role increases during the crisis.

By comparing the results obtained in [table 15](#) and [table 13](#), I find two distinct emerging trends: first, since the financial crisis, it is more popular to invest in a financially depressed firm. Businesses which experienced inadequate liquidity and operating finances to keep running their ongoing concerns were largely affected by the crisis. Activists capitalized on such opportunities through providing funding and necessary changes in business course. One such example could be General Growth Properties, Inc. (GGP), a commercial real estate investment firm, case in bankruptcy court. GGP was holding largely commercial mortgage-backed securities (CMBS) when the financial crisis hit the real estate markets. GGP had issues with refinancing its short-term debt, in addition to writing off many of its existing positions in investment, and constant pressure on prices weakened the firm to raise cash either from sale or financing. Thus, the growing worsened situation led the firm to file its case in the bankruptcy court. While the bidding of the assets was in process, three key investors actively participated. Among others, Pershing Square Capital Management recognized the underlying potential in GGP assets and thus gradually accumulated 25% stakes with gaining a seat on the board. With a comprehensive plan of reorganization which comprised of restructuring the debts and spinning off some inefficient assets, the firm emerged from bankruptcy on November 9, 2010.

Second, despite the crisis effect, a bulk of abnormal returns is driven by business-related activism. In full sample period, it generates more than 9% returns, which increases by 4.2 percentage points when I control for crisis effect. It indicates that business related activities which may involve restructuring, gaining better terms in mergers and acquisitions deals with a focus on growth opportunities are highly profitable across any economic situation.

[Table 16](#) presents results for the model using full specifications of crisis and interac-

tion terms. I regress CARs obtained from three different event windows across types of activism and crisis interaction terms with and without industry fixed effects. From columns 1 to 9, I find that estimates for types of activism become insignificantly negative in the pre-crisis period across multiple event windows. However, for the firms targeted without any prespecified activism plan, the effect appears significantly negative without incorporating year dummies. These results are contrary to the post-crisis period. The coefficients on crisis interaction terms are insignificantly positive in models with a crisis dummy. I drop the crisis variable, highly correlated with interactive terms, and obtain results which are significantly positive. Results from various models suggest that the market is highly responsive to the activists approaching a firm to influence its business course and its persistently pronounces without year effect. Following this finding, activists without a preplanned agenda of intervening in firm governance are rewarded the most by 10%.

## 5 Activism and long-term performance

### 5.1 Model, notations, and analysis

The long-term impact of fund activism on target firm’s performance has been assessed using several methodologies.<sup>23</sup> In section 9, I initially showed that an activist targets a firm based on certain observables. Thus, our analysis is bounded under the assumption of unconfoundedness in which we observe some factors related to both the dependent variable and with error term (Rosenbaum and Rubin, 1983). Given this particular setting, I identify propensity score matching approach which allows us to assess the conditional probability of a firm being selected for activism.

In this section and in what follows, I analyze the impact of fund activism on targeted firms in a succeeding year using propensity score matching. Initially, the standard formation of unit-level causal effect is modeled partly following Roy-Rubin model (Roy, 1951; Rubin, 1974) as:<sup>24</sup>

$$\tau_i = Y_{it1} - Y_{it0} \tag{4}$$

Where  $Y_{it1}$  is a potential outcome for firm  $i$  after receiving treatment in post-activism year one, and  $Y_{it0}$  is a counterfactual outcome for firm  $i$  before receiving treatment in pre-activism year 0. The potential outcome is defined as  $Y_i(D_i)$  for each firm  $i$ , where

<sup>23</sup>Generally, a standard Difference-in-Difference approach is considered a suitable technique to estimate the average effects in a setting where the firms are targeted randomly on unobservable characteristics (Blundell and Dias, 2009; Imbens and Wooldridge, 2009). In the simplest setting, the average gain over time in the control group is subtracted from the gain over time in the target group. Thus, in doing so, differencing helps mitigate biases in the second period on both dimensions timewise as well as cross-sectional.

<sup>24</sup>Roy-Rubin model with trivial notations has been adopted in the evaluation literature (Heckman and Navarro-Lozano (2004)). In this study, the generic functional form of treatment effect is presented in similar fashion.

$i = 1, 2, \dots, N$  and  $N$  represents the total population. However, I observe only one outcome for each firm  $i$ , i.e., the counterfactual outcome which is unobserved during the analysis and leading to the problem of misvaluation. To resolve this issue, [Caliendo and Kopeinig \(2008\)](#) suggest to concentrate on the average treatment effect rather than individual treatment effect  $\tau_i$ .

To assess the average effects of activism for a sample, representing the entire population, generally two eminent estimators are used: average treatment effect (ATE), and average treatment effect on the treated (ATT or ATET). Since we are interested in those firms which are selected on certain observables and prone to fund activism — in addition, the targeted firms are matched with another control group which is less attractive to the activist—thus, ATT seems more appropriate expression to estimate the activism impact. The average treatment on the treated is parameterized as:

$$\tau_{ATT} = E(\tau \mid D = 1) = E[Y_1 \mid D = 1] - E[Y_0 \mid D = 1] \quad (5)$$

However, [Caliendo and Kopeinig \(2008\)](#) argue that counterfactual mean for the firms being targeted —  $E[Y_0 \mid D = 1]$  is not observed, so we need a proper substitute for it to estimate ATT. The true parameter  $\tau_{ATT}$  is only identified, if:

$$E[Y_0 \mid D = 1] - E[Y_0 \mid D = 0] \quad (6)$$

### 5.1.1 Long-term performance using propensity score matching approach

In this section, I examine the targeted firms performance using propensity score matching approach assuming that firms are targeted on observables. In table 17, I regress the change in firm characteristic as a dependent variable against "Activism Dummy" with a vector of control specifications. The coefficient on activism dummy which indicates average treatment effect after being targeted and would be interpreted as activism impact on firm performance. To control fixed effects, I include firm size both in linear and quadratic form, industry, and year dummies. I include the observations for which I find close match in controlling sample firms based on propensity score.

Table 17 presents some interesting results. The coefficient on net change in cash is negatively significant at 1% level. Which initially implies that targeted firms substantially reduced the excess cash as compared to the preceding year of fund activism and thus, reduced the chances of being exposed to agency issues related to holding excess cash. In addition, long-term one year accounting performance exhibits that firms experienced an increase in investment and high profitability as indicated by the change in capital expenditure and profit margin variables.

In comparison with results presented in table 17 in time-series setting, table 18 reports the results in excess of matching sample firms one year following the activism. In doing so, I revisit the previous setting and subtract the matching firm characteristic from

the targeted firm. The net change in firm characteristic is regressed against *Activism Dummy*, and vector of control specifications. Since for each characteristic variable, the number of matches differs between target and nontarget firms; thus, each regression experiences different number of observations.

While discussing the results, I find that the coefficient on activism dummy is significant for various dependent variables (change in firm characteristics). Target firms improve value compared to matching sample firms in post-activism one year but marginally significant at 10% level. Valuation, the book-to-market value, is positively significant. In addition, the targeted firms profitability is also positively significant at 5% level. While comparing with matching firms' debt capacity in the post-activism period, targeted firms experience a modest reduction in market leverage by 0.39 percentage points, which is marginally significant.

### 5.1.2 Long-term performance using difference-in-difference approach

Section 5.1.1 tests the hypothesis whether firms are targeted based on observables. Thus, to address potential sample selection issue, I evaluate firms' performance using propensity score matching. In this section, on the contrary, I relax the assumption of firms being targeted on selected characteristics and use a standard difference-in-difference approach. I assume that counterfactual levels for target and nontarget firms are different but time invariably remains the same and thus formulate it as:

$$E[Y_{0t1} - Y_{0t0} \mid D = 1] - E[Y_{0t1} - Y_{0t0} \mid D = 0] \quad (7)$$

To evaluate the impact of activism on the targeted firms accounting and financial measures in one year following the activist presence, I consider both settings: time wise and cross-sectional. Following the activism-related studies (Brav et al., 2008; Boyson and Mooradian, 2011), I adopt two approaches. In the first approach, I assemble a matching sample using a benchmark of size/book-to-market value/2-digit *SIC* industry codes in the same year. Then compute the difference in means in pre- and post-activism means, and medians for target and matching sample firms. Then, perform a test of differences between the change in medians as proposed by Boyson and Mooradian (2011). In the second approach, using time-series setting, I compare the characteristics of targets in pre and post-activism and test the difference in medians.

Table 20 presents the characteristics of targeted firms in one year following activism and compares them with the matching sample firms. For the events taking place in 2013 and onward, Datastream is unable to provide data for the next fiscal year. Thus, firms targeted in 2013 and subsequent years are not considered. In addition, many firms in the first year of post-activism are either delisted, acquired, merged or simply did not produce data. I winsorize variables at 1%. The entire set of variables are annual and the accounting data is extracted using Datastream.

Table 20 from columns I to IV reports the change in means and medians in target and nontargets respectively. Columns V and IV exhibit the difference in change in medians for the targeted firms and report the Wilcoxon signed-rank test values to demonstrate the level of significance in the difference in medians. In analyzing firm valuation measured by Tobin's Q, to begin with, the difference in medians for targeted firms is negative 7% as compare to negative 80% in matching firms, suggesting that targeted firms have sustained the initial value over a longer period and shielded by the activist fund. The net value of Tobin's Q in excess of matching sample is 0.73 points which is significantly different from zero at the level of 5%. This finding is also supported by the change in book-to-market value. Target firms improve book-to-market value by 0.03 points as compare to 4% reduction in nontargeted firms. The net value of 7% is positively significant at 1%. These results explain the activist pre-announcement perception about target firms stock being undervalued and planned measures committed to enhancing the value.

In analyzing the targets operating profit margin and growth, the findings are interesting. Activists appear successful in sustaining the ex-ante level of profit margin in the year prior to activism. Looking at the difference in targets profitability in pre- and post-period might induce the perception that the target firms marginally sustain the pre-activism profit margin. However, they have indeed, outperformed the nontargets matched at the size/book to market/2 digit SIC industry codes. By decomposing the ratio (EBIT/Net Sales) and pursuing back to the change in sales, it seems obvious that the difference in sales is not significantly large. Thus, this finding, evidently, supports the view that targeted firms appear more profitable than peer firms. To extend the analysis further, I examine the comparative trends in growth in targets sales. The time-series patterns emerging from changes in growth reveal that there is a reduction of 2 percentage points following the activism. However, targets still lead their peers by 3% which is positively significant at 5% level.

On the side of investment, the capital expenditures in targeted firms improved substantially following the activism. The matching firms, on the contrary, reduce their spendings on assets. The sample comprises of companies largely drawn from the manufacturing sector (36% and 33% for targets and nontargets respectively). Thus, in post-activism, a positive change in capital expenditures has an important implication. A net effect of 4 percentage points, positively significant at 5% level, is attributed arguably to the coercive measures taken by activists.



## 6 Long-term performance and crisis

### 6.1 Regression analysis

#### 6.1.1 Model, notations, and analysis

In this section, I test two competing hypotheses: first, whether and how recent financial crisis has affected the long-term performance of the targeted firms. To examine crisis effect, I divide the sample into two distinct subgroups: in the pre-and post-crisis period. In the pre-crisis period, I include firms targeted between 2000 to 2006. For the post-crisis period analysis, I investigate firms targeted from 2007 to 2013.

Table 21 presents some interesting results using nonparametric time-series setting. I compute summary statistics for both samples before and after the crisis period. An overview of the difference in medians depicts that the crisis has substantially affected the target firms' size, profit margin, leverage, distribution, and investment. Firm size, measured by various means, including market capitalization, sales, and total assets is positively significant. The difference in medians for profit margin exhibits four percentage points, which is negatively significant at 1%. Moreover, profit ratio also reduces by 2% for the firms spanned over the crisis period. To assess whether crisis engenders any adverse effects on targeted firms existing debt structure, I find both book and market leverage values suggesting that firms seemingly reduce their debts following the crisis. However, the difference in medians is statistically insignificant. The leverage ratio (total debts to total assets), on the contrary, indicates that targeted firms have experienced higher levels of leverage. To explore underlying determinants for highly induced leverage in firms, I look at investment measures by assuming that additional borrowings might have used to initiate new projects. I find that target firms experience an increase in research and development and capital expenditures by 2.4% and 2% respectively, which are significantly positive at 1%. Next, I examine whether crisis affects the dynamics of targeted firms distribution policy. In answering it, I find that the median observations for dividend yield, for both samples, are zero before and after the crisis. I test, alternatively, the difference in means, which is negatively significant at 5%. Thus, from this finding, we may infer that targeted firms reduce paying dividends to shareholders in the aftermath of the crisis.

In table 22, I evaluate the target firms' performance in excess of matching firms before and after the crisis period.<sup>25</sup> The differences in medians suggest some mixed results. Firm size in excess of matching sample firms is larger by 1.4 percentage points which is

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<sup>25</sup>The change in firm's characteristics is computed for both target and nontarget, before and after the crisis period. To simplify it by an example, I assume the change in market capitalization, i.e., MV:

$$\Delta Characteristic = MV_{2007-13}^t - MV_{2000-06}^t - MV_{2007-13}^m - MV_{2000-06}^m \quad (8)$$

Where  $MV_{2007-13}^t$  is the average market value of firm in sample targeted during 2007 to 2013,  $MV_{2000-06}^t$  is the average market value of firm in sample targeted during 2000 to 2006,  $MV_{2007-13}^m$  is the average market value of matching firms sample during 2007 to 2013,  $MV_{2000-06}^m$  is the average market value of matching firms during 2000 to 2006.



significant at 5% level. I find positive effect for size when measured by net revenues and assets, though statistically insignificant.

In terms of valuation, targeted firms outperform the nontargets in the post-crisis period which is significant at 1% level. In addition, firms find a remarkable increase in investment proxied by capital expenditures in the post-crisis period. However, the downside effects of fund activism during crisis suggest that targeted firms experience higher leverage as evidenced by the positively significant difference in medians for book leverage and leverage ratio. Additionally, I also find that targets profit margin reduces in the post-crisis period, which is marginally significant at 10%. In comparison with results in table 20, the findings in this analysis partly share some commonalities. For instance, the target firms experience improvement in valuation, investment, and distribution.

Activism critiques argue that depriving firms of reserves in the form of available surplus cash and inducing additional leverage might reduce the probability of its solvency during the unfavorable market conditions. [Bebchuk et al. \(2015\)](#) test whether activist-led firms become more vulnerable to economic shocks prior to the outburst of the recent crisis. They find no evidence. Augmenting on their research concerning targeted firms performance during the crisis period, I test the second hypothesis and seek whether actively targeted firms demonstrate a higher level of survivability and performance than matching sample firms in the recent financial crisis. To do so, I examine a sample of firms targeted during 2006 and 2007 and evaluate their performance in two years before and after the crisis. By so doing, the 'change in performance' may allow us to attribute the outcome to the fund activism in excess of matching firms during the crisis period. Initially, in a setting, where targeted and nontargeted firms are exposed to an exogenous shock, i.e., crisis, and we are interested in examine whether actively targeted firms perform better than not actively targeted firms. Instead of evaluating firm's characteristics (the proxy for firm performance) before and after the activism, I evaluate the change in characteristics before and after the activism in pre-and post-crisis period. To simplify the analysis, I relax the assumption of targets being selected on observables.

The difference-in-difference setting initially parameterizes the crisis effect in a simple regression model as:

$$\Delta Characteristics_{it} = \alpha_i + \beta_i Presence + \gamma_i Dummy_i + \theta_i Control_i + \varepsilon_i \quad (9)$$

Where  $\Delta Characteristics$  is the change in a specific characteristic before and after the crisis period in excess of matching sample firm. The explanatory variable *Dummy* takes a value of 1 if a firm is targeted during that year (during the period we analyze the change in characteristic) by any other activist. *Presence* is a dummy variable which is equal to 1 if the activist fund still has stakes in the firm in the succeeding year of the crisis. The variable *Control* is the vector of specifications include size, indebtedness,

age, year and industry fixed effects.

Table 24 presents the estimates on dummies when the change in firm characteristic (after minus before) is regressed. For each regression, I control for firm size, age, year and industry fixed effects. Considering firms are targeted randomly, I compare the firms with matching sample firms using a benchmark of size/book-to-market value and 2-digit *SIC* industry codes. The analysis experiences a low number of observations (11%) due to firms matched on a well-defined benchmark, thus dropping many unmatched firms, and limiting to the firms targeted during 2006 and 2007.

In comparison with [Bebchuk et al. \(2015\)](#) findings, the coefficient on "Fund Presence" is negative in the first year, which implies that firm value has reduced significantly in the first year of activism during the crisis period. In the second year of fund activism, however, it becomes insignificantly positive. Following the first year of activism, targeted firms improved profitability and profit margin (at 5% and 10% respectively) and investment (indicated by research and development), which is positively significant at 10%. These results, however, become significantly negative in the second year of activism during the crisis period. I do not find any evidence that presence of another activist fund (outside sample) affects firm's performance. These results partly suggest that targeted firms enhanced their earnings and investment even during the crisis period.

In table 24, I regress the change in firm characteristic (after minus before) in excess of matching firms against a vector of dummies, and control variables.<sup>26</sup> The results obtained using cross-sectional setting, interestingly do not deviate much from those in table 23. The estimates on the change in profitability and investment are positively marginally significant. Thus, we may conclude that firms targeted by activists performed relatively well in comparison with matching firms during the crisis and I do not find evidence that activist-owned firms become vulnerable to economic shocks compared to nontargets during the crisis period, a consistent finding with [Bebchuk et al. \(2015\)](#).

## 7 Robustness check

To examine whether our results for crisis effect and types of activism hold for different model settings, I consider several robustness checks. First, I investigate whether the size of the firm is an underlying source of surviving from getting delisted after activism. To

<sup>26</sup>The change in firm characteristics is computed for both target and nontarget before and after the crisis period in following simplistic setting:

$$\Delta Characteristic = MV_{2008-09}^t - MV_{2006-07}^t - MV_{2008-09}^m - MV_{2006-07}^m \quad (10)$$

Where  $MV_{2008-09}^t$  is the average market value for firms targeted during 2008 to 2009,  $MV_{2006-07}^t$  is the average market value for firms targeted during 2006 and 2007,  $MV_{2008-09}^m$  is the average market value for matching firms targeted during 2008 and 2009,  $MV_{2006-07}^m$  is the average market value for matching firms targeted during 2006 and 2007.

explain further, a big portion of the targeted firms got delisted following the activism in this study. Those firms either fully acquired or went private from public, and as a result did not report annual accounting and stock price data to Datastream. I check whether firm size plays any role during the crisis. Second, I include liquidity into the core model setting to test whether it explains cross-sectional returns to the firm capital structure.

## 7.1 Size explains the cross-sectional distribution of abnormal returns

Table 25 presents cross-section of CARs for multiple event windows by incorporating Schedule 13F and six-months pre-activism daily returns to initial model setting.<sup>27</sup> In this sample, a large number of activist funds hold concentrated ownership in target firms and have filed Schedule 13F. Given that, I am interested in to analyze the impact of such significant stakeholding on market perception and the subsequent impact on initial stock price.

An overview of the estimates reveals that the coefficients on types of activism change across multiple event windows. In the longest event-window of 26 days, the estimates on General Undervaluation, Capital Structure, and Business Strategy are positively significant at 10% and 5% respectively. In comparison with results presented in table 13, the magnitude of coefficients reduces, however, remain statistically significant.<sup>28</sup>

## 7.2 Impact of firm size and liquidity on CARs during crisis period

Table 26 presents results regressing *CARs* obtained from various event windows against types of activism and crisis-interaction terms. I examine the market responses to the activist stated objective given the firm size and liquidity during the crisis period. By introducing firm size and liquidity interaction terms into our settings, I attempt to decompose CARs and measure the differential effect in types of activism perceived by the market. To do so, I construct size (firm) interaction terms with all types of activism during the crisis period. In constructing leverage interaction terms, I argue that activists suggesting changes to target's capital structure may involve the restructuring of the debts, in particular, during the crisis period, thus, market perceives such changes positively. To the funds getting involved with firms being financially depressed also primarily requires restructuring the debts.

In table 26, using full model specifications and a vector of control variables, I find that the estimates with interaction terms involving leverage are positively significant across various event windows. These findings support the view that market positively

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<sup>27</sup>Institutional investment manager is required to report Schedule 13F to the SEC within 45 days of a calendar year after having an aggregate market capitalization of at least \$100 million.

<sup>28</sup>In an auxiliary regression, I substitute firm size measured by market capitalization with proxies as net sales and total assets to check whether different measures explain the cross-sectional distribution of abnormal returns.

responded to the activist fund's involvement in a firm capital structure during the crisis period.

## 8 Concluding summary

This study examines hedge fund activism impact on target firms' performance with a largely hand-collected unique dataset, which consists of 112 activist funds targeting 551 firms over the period of January 2000 to December 2013. An activist hedge fund accumulates 5% or more ownership stakes in a firm with an intent to influence firm's internal governance by filing a Schedule 13D Form to the U.S. Securities and Exchange Commission.

The study investigates the fundamental question whether the recent financial crisis has affected the hedge fund activism. Since the crisis, critics have been questioning the effectiveness of hedge fund monitoring in targeted firms. I examine whether crisis might have changed the traditional approach to activism and introduced new paradigm shifts, thus making it interesting to investigate whether and how activists have shaped the targeting patterns of impacting the firms.

The study thoroughly examines the funds' objectives, targeting tactics, firms' responses, and the evolving outcomes. In comparison with the previous studies, it investigates the emerging trends in strategic ways of impacting firms before and after the crisis. In its analysis, it identifies pre-crisis period starting from January 2000 to June 2007 and post-crisis from July 2007 to December 2013.

The targeted firms in this study share features which are partly in line with the previously documented studies. These sample firms are small and medium-sized with an undervalued stock, and operationally profitable compared to the matching companies in the year before activism. A firm being a small-cap allows activist to acquire a meaningful stake, assert pressure, and implement its proposed agenda. To pursue their stated objectives, activists tactically interact with firm's management. In some cases, the interaction occurs in a friendly way, and on various occasions, it materializes in a hostile manner.

The findings of this study are partly consistent with the prior documented literature on fund activism. In the short run, the market reacts positively to the fund activism around the announcement of 13D filings. The longest (-20, +5) event window generates a mean *CARs* about 5.34%, which is in line with reported studies. A large part of the variation in cross-sectional *CARs* accrues to the activists targeting firms with an objective of restructuring the debts followed by business-related activism. Since the crisis, funds targeting firms to change the business strategy earn more than 15% returns which

are followed by funds targeting financially depressed firms.

I also test the competitive hypothesis whether abnormal short-run returns are extracted at the cost of long-term value destruction. The long-term accounting performance of the targeted firms, after one year of activism, suggests mixed results. Target firms substantially find an increase in profitability, investment, and improvement in value.

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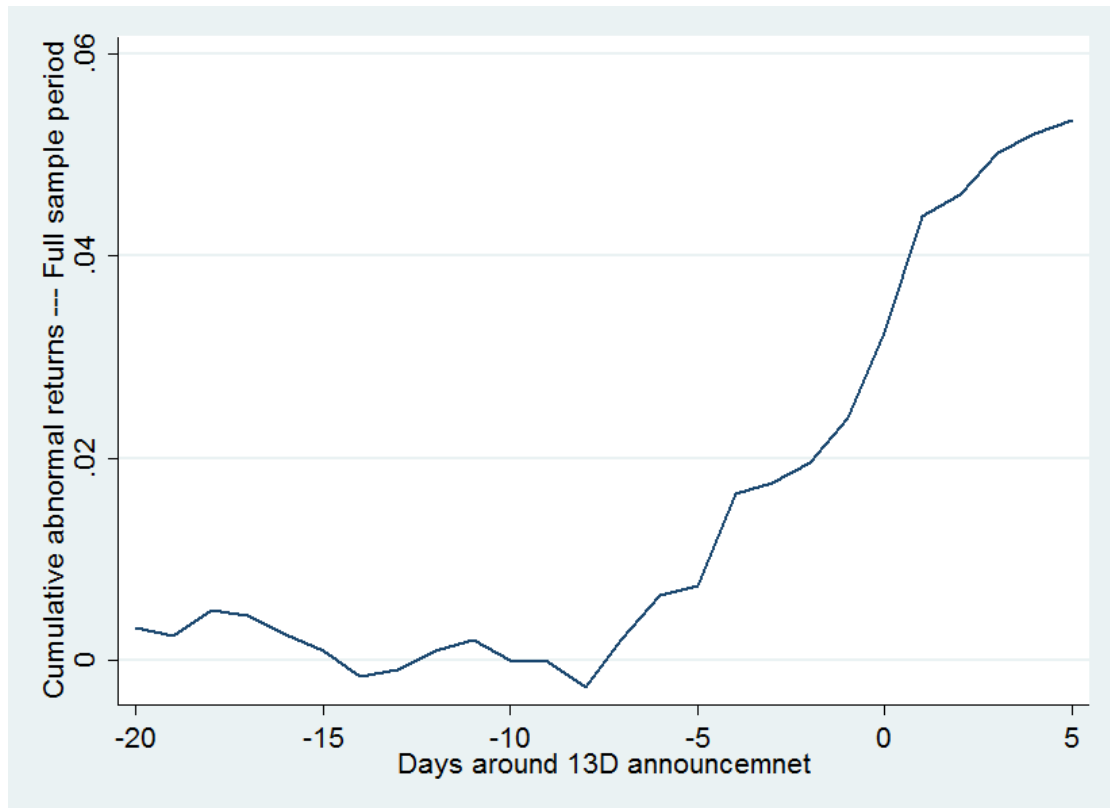
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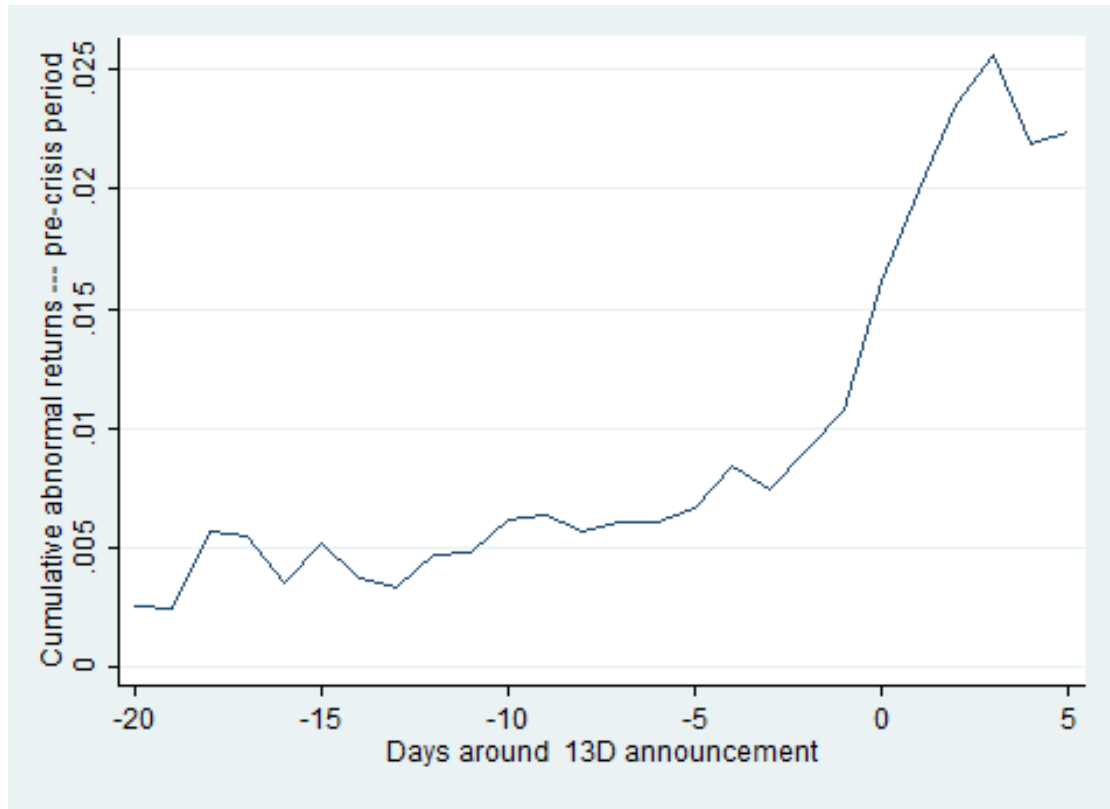
**Figure 1: CARs (-20, +5)**

Cumulative abnormal returns are plotted over the longest event window of (-20, +5) 26 days for a sample of 551 firms targeted by 112 hedge funds over the period of January 2000 to December 2013. To compute *CARs* for each target, we use [Fama and French \(1993\)](#) well-constructed six value-weighted portfolios formed on size, and book-to-market value. 0 indicates the announcement date when the activist formally reports a 13D Schedule to the Securities and Exchange Commission of the US within ten days of acquiring ownership in the firm. We consider 20 days prior to the event date and extend to 5 days after the announcement date.



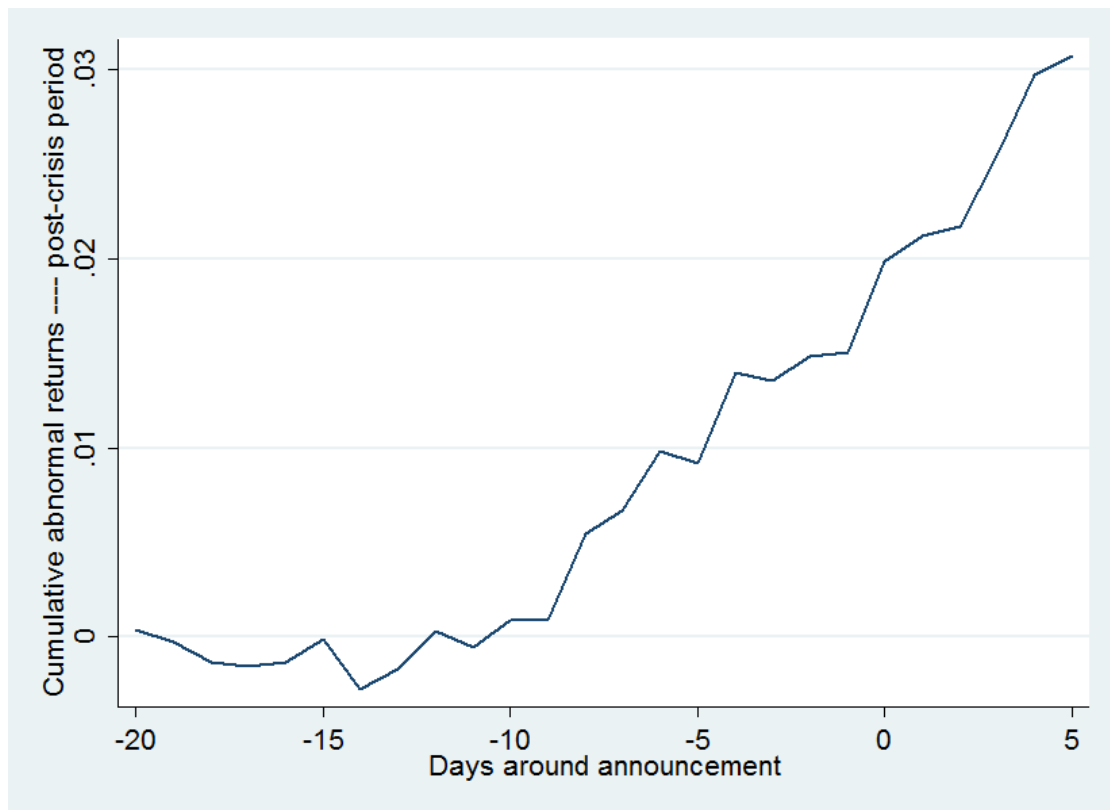
**Figure 2: Pre-crisis CARs (-20, +5)**

We decompose the sample into two subgroups: pre- and post-crisis period. In our study, we define pre-crisis period employing a dummy which takes the value one if a firm is targeted in the period from January 2000 to June 2007. Figure 2 plots CARs for the pre-crisis period. Out of total 551 firms, 334 firms or 60% of the sample falls in the pre-crisis period. To compute *CARs* for each target, we use [Fama and French \(1993\)](#) well-constructed six value-weighted portfolios formed on size, and book-to-market value.



**Figure 3: Post-crisis CARs (-20, +5)**

Figure 3 exhibits the CARs performance in the post-crisis period. In the sample, we define post-crisis period from July 2007 to December 2013. 40% of the sample, which constitutes around 220 firms fall into post-crisis period. To compute *CARs* for each target, we use [Fama and French \(1993\)](#) well-constructed six value-weighted portfolios formed on size, and book-to-market value.



**Table 1: Variable definitions**

<b>Variable</b>	<b>Description</b>
Market value	Total number of outstanding shares times price per share.
Net sales	Firm's annual sales in dollars.
Tobin's Q	Aggregate of long-term debt and the market value of equity divided by aggregate of long-term debt and the book value of equity.
Book-to-market ratio	Firm book value of equity/market value of equity.
Growth in sales	Annual percentage growth in sales.
Cash flows	Cash as a percentage of total assets.
Book leverage	Total debt divided by the aggregate of total debt plus the book value of total equity.
Market leverage	Total debt divided by the aggregate of total debt and market value of equity.
Cash	Aggregate of cash and cash equivalents divided by total assets.
New equity	Amount of new equity issued during the year divided by the lagged assets.
Dividend yield	Aggregate of common dividend and preferred dividend divided by the aggregate of the market value of common stock and market value of preferred stock.
Payout	Total dividend divided by the net income before extraordinary items.
Capital expenses	Capital expenses as percentage of total assets.
Research and development	Research and development as a percentage of total assets.
Return on equity	Net income divided by total equity.
Profitability	Earnings before interest and taxes divided by net sales.
Liquidity	Cash and short-term assets divided by current liabilities.
Growth ratio	Retention rate, which is equal to 1 minus dividend declared divided by the net income
Return on equity	Net income divided by the total equity.

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Variable	Description
WACC	Weighted average cost of capital, computed as: $\frac{E}{V}R_e + \frac{D}{V}R_d(1 - T_c)$ $R_e$ Cost of equity $R_d$ Cost of debt $E$ Total common shareholders equity $D$ Total debt $V$ Total value is an aggregate of total equity and total debt.
Cost of equity	Dividend per share divided by the current market value of stock multiplied by the growth rate of dividends.
Cost of debt	Annual interest payment of total debt divided by market value.
Industry	2-digit SIC industry codes of each firm

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*Data sources:* All accounting and financial figures are extracted from the annual reports of target firms using Datastream.

**Table 2: Number of hedge funds and their target firms**

This table summarizes in detail the total events, and number of firms targeted by activist hedge funds over the period of 2000 to 2013.

Fund / Firm pair	Number
Total fund/firm pairs	760
Individual fund/target firm pair	760
Number of individual targets	688
Number of individual funds	112
Number of hedge fund management companies	86
Number of firms targeted once	398
Number of firms targeted twice	114
Number of firms targeted thrice	27
Number of firms targeted four times	12
Number of activist hedge funds with 1 target	18
Number of activist hedge funds with 2 targets	13
Number of activist hedge funds with 3 targets	11
Number of activist hedge funds with 4 targets	15
Number of activist hedge funds with 5 targets	11
Number of activist hedge funds with 6 targets	13
Number of activist hedge funds with 7 targets	15
Number of activist hedge funds with more than 8 targets	16

**Table 3: Chronological distribution of funds**

The table represents the chronological distribution of the activist hedge funds over the period of January 2000 to December 2013.

Years	Number of Funds	Percentage of sample
2000	10	8.93%
2001	4	3.57%
2002	7	6.25%
2003	6	5.36%
2004	7	6.25%
2005	7	6.25%
2006	13	11.61%
2007	10	8.93%
2008	9	8.04%
2009	9	8.04%
2010	17	15.18%
2011	6	5.36%
2012	2	1.79%
2013	5	4.46%
<b>Total</b>	<b>112</b>	<b>100.00%</b>



**Table 4: Chronological distribution of target and matching firms**

The following table represents the chronological distribution of firms drawn from Schedule 13D Files, and Schedule 13G Files from EDGAR search system in Securities and Exchange Commission of the US. These files are reported by a similar set of activist US hedge funds over the period of January 2000 to December 2013. A 13D Disclosure indicates the intent of an activist to influence the internal governance of target firm whereas a 13G Disclosure shows a fund has no intention to play an active role. All firms are publicly traded at *NYSE/AMEX/NASDAQ* exchanges.

Year	No. of targets	% of sample	No. of matching	% of sample
2000	23	4.24%	12	1.34%
2001	30	5.52%	28	3.12%
2002	33	6.08%	35	3.90%
2003	28	5.16%	78	8.69%
2004	38	7.00%	106	11.80%
2005	68	12.52%	76	8.46%
2006	67	12.34%	148	16.48%
2007	77	14.18%	122	13.59%
2008	55	10.13%	83	9.24%
2009	23	4.24%	55	6.12%
2010	48	8.84%	87	9.69%
2011	32	5.89%	42	4.68%
2012	10	1.84%	9	1.00%
2013	11	2.03%	17	1.89%
<b>Total</b>	<b>543</b>	<b>100%</b>	<b>898</b>	<b>100%</b>

**Table 5: Percentage of ownership held by fund and firm**

The table represents the summary statistics of the information gathered from Schedule 13D Filing using several items, in particular, Item 5 known as "Interest in the Securities of the Issuer." This statistics provides averages about 760 events filed by 112 activist hedge funds over the period of January 2000 to December 2013.

Initial Filing	Mean	Median	Sd.	Min	Max	Obs.
Shares held by hedge fund (\$mil.)	46.1	2,600,329	626	147	12200	733
Total outstanding shares by the target	410	28	7930	363	210000	717
Percentage of ownership held by fund	13.13%	7.75%	15.87%	5.71%	100.00%	717
Cost(incl./excl.commission)(\$mil.)	77.7	16.1	222	7794.2	2310	433

**Table 6: Categories of activism**

This table summarizes the stated objectives and categorizes them into well-defined types of activism for the 760 events reported over the period of January 2000 to December 2013. The types of activism are classified partly following the specifications of [Brav et al. \(2008\)](#). Each type of activism is a dummy which takes value 1 if a specific objective falls in a particular category. The categories are non-mutually exclusive. Panel A summarizes types for the entire set of events. Panel B presents the summary of activism types for the pre-crisis period which begins from January 2000 to until June 2007. For one-third observations which fall in the post-crisis period between July 2007 to December 2013, panel C illustrates the information on types of activism.

*Panel A: Types of activism for entire sample period*

No.	Category	Stated Objective	Number of Events	% of Total
1	CAT1	General Undervaluation	601	79.3%
2	CAT2	Capital Structure	51	6.7%
3	CAT3	Business Strategy	119	15.7%
4	CAT4	Sale of Target Firm	41	5.4%
5	CAT5	Governance	85	11.2%
6	CAT6	Bankruptcy/ Chapter 11	10	1.3%
7	CAT7	Arbitrage	2	0.3%

*Panel B: Types of activism before crisis Jan 2000 - June 2007*

No.	Category	Stated Objective	Number of Events	% of Total
1	CAT1	General Undervaluation	381	68.16%
2	CAT2	Capital Structure	32	5.72%
3	CAT3	Business Strategy	68	12.16%
4	CAT4	Sale of Target Firm	23	4.11%
5	CAT5	Governance	52	9.30%
6	CAT6	Bankruptcy/ Chapter 11	3	0.54%
7	CAT67	Arbitrage	2	0.3%

*Panel C: Types of activism during and after crisis July 2007 - December 2013*

No.	Category	Stated Objective	Number of Events	% of Total
1	CAT1	General undervaluation	221	63.14%
2	CAT2	Capital Structure	20	5.71%
3	CAT3	Business Strategy	51	14.57%
4	CAT4	Sale of Target Company	18	5.14%
5	CAT5	Governance	33	9.43%
6	CAT6	Bankruptcy/ Chapter 11	7	2.00%

**Table 7: Fund techniques to influence the target**

The following table summarizes the qualitative information about an activist fund on how it plans to carry out agenda of influencing the target firm. Activist describes its reason of targeting firm in Item 4 known as "Purpose of Transaction," along with precise plan of action to implement the course of agenda in target firm. These suggested measures could be of multiple-tasking in nature simultaneously. We collect this information from 760 Schedule 13D reported to SEC and filed by 112 activist hedge funds over the period of January 2000 to December 2013.

<b>No</b>	<b>Tactics</b>	<b>Number of Events</b>	<b>Percentage of Events</b>
1	Meeting with the management on preliminary basis in order to get involve with business activities / negotiation	408	53.62%
2	Seeking board seat for better representation of shareholders interest and to maximize the value through large stake	93	12.25%
3	No more board representation / withdrawal of board seat	17	2.24%
4	Negotiation over limiting poison pills	7	0.92%
5	Shareholder proposal for business structure changes	65	8.56%
6	Negotiation with the larger shareholders in order to change managerial or corporate policy changes	41	5.40%
7	compel to restructure/working with other shareholders	69	9.09%
8	Solicitation/ proxy contest for board replacement or other managerial changes / preventing from acquiring or merging	31	4.08%
9	Legal Suing /sues in the bankruptcy court to fulfill the legal requirements	17	2.24%
10	Acquiring of the total firm/ complete buyout / merging with other firm	12	1.58%
	<b>Total</b>	<b>760</b>	<b>100%</b>

**Table 8: Target characteristics in year before activism**

This table reports the characteristics of target firms for the year before activism and compares it with a matching sample based on size/book-to-market/2-digit SIC industry. The sample consists of 551 firms targeted by 112 hedge funds over the period of 2000 to 2013. Market Value is firm stock price times number of shares outstanding and measured in dollars. Sales represent firm annual sales in dollars. Tobin's  $Q$  is defined as (long-term debt + the market value of equity/ long term debt + the book value of equity). The book-to-market ratio is expressed as the book value of equity/market value of equity. Sales Growth is annual percentage growth in sales. Book Leverage is defined as debt/(debt + book value of equity), Leverage is measured as total debts / total equity, Market Leverage is defined as debt/ (debt + market value of equity). Cash as a percentage of assets is defined (cash + cash equivalents)/assets. Dividend Yield is defined as (common dividend + preferred dividend)/(market value of common stock + market value of preferred stock). The payout is defined as total dividend / net income before extraordinary items. Capital Expenses and Research and Development are measured as a percentage of assets. Profitability is operating profit margin and measured as EBIT / Net sales. The entire set of data is extracted from Thomson Reuters DataStream. We report the mean, median, and standard deviation for both target and nontarget samples. Column VII exhibits the difference in medians between the target and matching firm, and column VIII reports the p-value to demonstrate the level of significance in medians. All variables are winsorized at 1%.

Characteristics	Target firms			Matching firms			Median comparison <sup>1</sup>	
	Mean	Median	Sd.	Mean	Median	Sd.	Difference	p-val
Market Value (\$mil.)	987.86	257.78	2,257.88	936.22	270.33	2,066.06	-12.55	0.2003
Sales (\$mil.)	869.22	279.20	1,568.37	613.68	92.36	1,268.47	186.84	0.0001
Tobin's $Q$	2.56	1.55	4.01	2.13	0.77	5.62	0.78	0.0000
Book-to-market	-1.10	0.45	21.67	-1.37	0.43	25.85	0.02	0.0385
Growth	1.11	1.04	0.67	1.10	1.02	1.24	0.02	0.0454
ROA	-0.04	0.03	0.43	-0.18	-0.01	0.50	0.04	0.0000
Book Leverage	0.46	0.29	1.03	2.13	0.77	5.62	-0.48	0.0000
Leverage	0.83	0.27	4.86	0.41	0.16	2.52	0.11	0.0942
Market Leverage	0.26	0.19	0.27	0.18	0.06	0.24	0.13	0.0022
Cash	0.15	0.08	0.19	0.30	0.21	0.29	-0.13	0.0000
Dividend Yield	0.45	0.00	1.35	0.02	0.00	0.08	0.00	0.0041
Payout	0.00	0.00	0.59	0.17	0.00	2.01	0.00	0.4575
Capital Exp.	0.13	0.01	0.23	0.12	0.01	0.25	0.00	0.6390
R& D	0.10	0.02	0.23	0.12	0.01	0.25	0.01	0.0403
Profit	-2.62	0.04	17.04	-6.32	0.01	32.17	0.03	0.0792
Assets (\$mil.)	1,426.21	356.61	4,021.32	919.04	120.43	2,670.10	236.18	0.0000

<sup>1</sup> Wilcoxon signed rank test for differences in medians between the target and the matched firms.

**Table 9: Logit regression – Likelihood of fund activism**

The table reports the effects of covariates on the probability of being targeted by a hedge fund in the year before activism. The dependent variable is a dummy which takes a value 1 if a firm had been a target in the previous year. All independent variables are lagged by one year. Column I reports the coefficients and column II reports marginal probabilities. All data is extracted from Datastream. We winsorize all variables at 1%. \*, \*\*, \*\*\* Indicate the level of significance at 10%, 5%, and 1%.

Characterisitcs	Coefficients	Marginal Probabilities
Market Capitalization	-2.962** -1.439	-0.414* 0.232
Total Sales	-0.109 (0.151)	-0.015 0.0206
Growth	-0.325 (0.199)	-0.045* 0.027
Return on Assets	-0.679* (0.397)	-0.095* 0.057
Tobins Q	-0.540** (0.217)	-0.075*** 0.023
Book to Market value	0.169 (0.108)	0.024 0.016
Book Leverage	0.575*** (0.221)	0.080*** 0.024
Cash	1.769* -1,064	0.247 0.154
Dividend Yield	-0.795 (0.727)	-0.111 0.089
Research Development	-0.000 (0.000)	-1.51e-07 0.000
Capital Expenditures	-6.026* -3,157	-0.842 0.531
Constant	1.182** (0.572)	- -
Observations	88	
Pseudo R-squared	0.211	

**Table 10: Target characteristics in the year before activism - Crisis period 2007 -2013**

This table presents the characteristics of firms targeted during 2007 to 2013 in the year prior to activism. We decompose our full sample (2000–2013) into two parts; before and after the crisis period. For crisis period, we include the years from 2007 to 2013. Target firms' characteristics are compared with a matching sample using a benchmark of size, book-to-market value, and 2-digit SIC codes. Table 1 in Appendix provides detailed definition about the variables. The data on accounting measures is extracted from using Thomson Reuters DataStream. We report summary statistics including mean, median, and standard deviation for both target and nontarget samples. Column VII exhibits the difference in medians between the target and matching firm, and column VIII reports the Wilcoxon signed-rank test p-value to demonstrate the level of statistical significance in medians. All variables are winsorized at 1%.

Characteristics	Target firms			Matching firms			Median comparison <sup>1</sup>	
	Mean	Median	Sd	Mean	Median	Sd	Difference	p-val
Market Value (\$mil.)	961.75	257.78	2527.90	1068.63	261.49	2420.86	-3.71	0.0237
Sales (\$mil.)	862.22	260.02	1694.81	830.87	97.13	1607.09	162.89	0.0210
Tobin's Q	2.15	1.48	2.00	1.78	0.63	4.23	0.85	0.0046
Book-to-market	0.69	0.54	0.79	0.57	0.59	1.54	-0.05	0.3878
Growth	1.17	1.05	0.89	1.17	1.01	1.42	0.04	0.1578
ROA	-0.003	0.03	0.19	-0.15	-0.00	0.62	0.03	0.0034
Book Leverage	0.54	0.39	0.69	1.78	0.63	4.23	-0.24	0.3709
Leverage	1.37	0.52	7.76	0.22	0.16	1.91	0.36	0.2364
Market Leverage	0.31	0.26	0.23	0.22	0.07	0.26	0.19	0.0635
Cash (% Assets)	0.14	0.09	0.14	0.29	0.16	0.29	-0.07	0.0157
Dividend Yield	2.33	1.73	1.98	0.02	0.00	0.12	1.73	0.0077
Payout	0.05	0.06	0.69	-0.01	0.00	0.47	0.06	0.6245
R&D	0.11	0.08	0.12	0.12	0.00	0.30	0.08	0.9443
Profit	-0.69	0.03	2.71	-0.07	0.03	0.37	0.00	0.2636
Assets (\$mil.)	1670.56	380.50	5242.40	1364.16	162.03	3203.39	218.47	0.0108

<sup>1</sup> Wilcoxon signed rank test for differences in medians between the target and the matched firms.

**Table 11: Firm characteristics during crisis period 2007 - 2013 using propensity score matching**

This table reports the results gained using propensity score matching approach. For a set of 263 target firms, we match them with 545 nontarget firms using propensity score during 2007 to 2013. In the model, we include firm characteristics, industry, and year. All variables are well-defined in Appendix table ???. \*\*\*, \*\*, \* indicate 1%, 5%, and 10% level of statistical significance.

Variables	Sample	Treated	Control	Difference	S.E.	T-test
LMV	Unmatched	4.898	6.588	-1.689	0.304	-5.54
	<i>ATT</i>	5.283	5.62	-0.342	0.476	-0.72
LSales	Unmatched	18.63	20.232	-1.599	0.347	-4.60
	<i>ATT</i>	18.811	19.57	-0.762	0.556	-1.37
Growth	Unmatched	2.123	1.275	0.848	0.433	1.96
	<i>ATT</i>	1.145	1.421	-0.275	0.231	-1.19
Profit	Unmatched	-0.964	-0.159	-.804	0.288	-2.79
	<i>ATT</i>	-0.052	-0.633	0.580	0.414	1.40
ROA	Unmatched	-0.228	0.0155	-0.244	0.074	-3.26
	<i>ATT</i>	0.008	-0.106	0.114	0.087	1.32
Tobin's Q	Unmatched	2.22	2.811	-.587	0.426	-1.38
	<i>ATT</i>	2.476	2.302	.173	0.891	0.19
Book/Market	Unmatched	0.342	0.576	-0.233	0.189	-1.23
	<i>ATT</i>	0.530	0.693	-0.163	0.164	-0.99
Book Leverage	Unmatched	0.503	0.328	0.175	0.085	2.13
	<i>ATT</i>	0.274	0.390	-0.116	0.113	-1.03
Market Leverage	Unmatched	0.268	0.193	0.074	0.045	1.63
	<i>ATT</i>	0.148	0.218	-0.070	0.068	-1.02
Leverage	Unmatched	2.700	2.509	0.191	0.347	0.55
	<i>ATT</i>	3.252	3.330	-0.078	0.800	-0.10
Dividend Yield	Unmatched	0.282	0.260	0.022	0.149	0.15
	<i>ATT</i>	0.201	0.00	0.201	0.121	1.65
R&D	Unmatched	0.194	0.072	0.122	0.048	2.53
	<i>ATT</i>	0.103	0.116	-0.0131	0.051	-0.26
CapEx	Unmatched	4.938	5.692	-0.754	1.406	-0.54
	<i>ATT</i>	5.371	5.36	0.0111	2.828	0.00
LAssets	Unmatched	19.037	20.387	-1.350	0.3134	-4.31
	<i>ATT</i>	19.046	19.749	-0.702	0.487	-1.44



**Table 12: CARs for multiple event windows and statistical significance**

The table reports cumulative abnormal returns for multiple event-windows and their statistical significance for a sample of 551 firms targeted over the period of January 2000 to December 2013. The longest event window spans over (-20, +5) or 26 days. The event date is the day, when an activist officially announces its holding in target firm upon crossing 5% or more ownership stake. The price data to compute daily returns is extracted by using Thomson Reuters Datastream. \*\*\*, \*\*, \* Indicates 1%, 5%, and 10% level of significance.

Event Window	CARs
(-20, +5)	5.34% ***
(-10, +5)	5.14%***
(-10, +10)	5.43%***
(0, +15)	2.80%***

**Table 13: Cross-section of CARs and types of activism**

The following table reports the OLS regression results. The dependent variable is cumulative abnormal returns computed at multiple event-windows around the announcement dates in the short-run. We regress *CARs* obtained from various event-windows against well- defined types of activism and estimates are illustrated in four models. All regression control for the size of firm, industry and year fixed effects. Firm size (logarithm of market capitalization), and long-term debt (ratio of the natural logarithm of long-term debt to the sum of the natural logarithm of total debt and market value of equity) are deviated from median value. The activism categories are general undervaluation, capital structure, business strategy, the sale of the target firm, and corporate governance. All categories are non-mutually exclusive. The types of activism are dummies; General Undervaluation is set to 1 if fund simply states its objective in its transaction purpose to value maximize without any confrontation or future strategic plan, 0 otherwise; Capital Structure is equal to 1, if fund targets the company with clear stated goal of changing in capital structure in its purpose of transaction, 0 otherwise; Business Strategy is set to 1, if fund explicitly describes it objective as to make changes in targets business direction, 0 otherwise; Sale of Target is set to 1, if fund mentions its goal to sell partially or fully its target, 0 otherwise; Corporate Governance is equal to 1, if fund describes its objective to involve in its target governance matters, 0 otherwise. The cumulative abnormal returns are regressed into four separate models with multiple event windows of (-20,+5), (-10,+10), (-10,+5), and (0, +15). The standard errors are adjusted for heteroskedasticity. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% level of statistical significance.

<i>Independent Variables</i>	<i>Dependent Variable</i>							
	<i>Cumulative Abnormal Returns on Different Event-Windows</i>							
	CAR(-20,+5)		CAR(-10,+5)		CAR(-10,+10)		CAR(0,+15)	
	Coef.	s.e.	Coef.	s.e.	Coef.	s.e.	Coef.	s.e.
<i>LMV</i>	-0.026***	0.008	-0.017***	0.006	-0.017**	0.007	-0.010*	0.005
<i>LTD</i>	0.004	0.003	0.003	0.002	0.002	0.002	-0.002	0.002
General Undervaluation	0.028*	0.015	0.039***	0.011	0.042***	0.012	0.019*	0.010
Capital Structure	0.122**	0.050	0.095**	0.047	0.077	0.050	-0.028	0.065
Business Strategy	0.092**	0.038	0.075**	0.034	0.079**	0.039	0.033	0.028
Sale of target	0.044	0.035	0.015	0.025	0.031	0.027	0.046**	0.019
Governance	0.019	0.048	0.011	0.028	0.008	0.041	0.004	0.049
Year		Y		Y		Y		Y
Industry		Y		Y		Y		Y
Observations	355		355		355		355	
R2	0.090		0.108		0.082		0.027	
Adjusted R2	0.076		0.094		0.068		0.013	

**Table 14: Cross-section of *CARs* and types of activism – crisis effect**

This table reports the OLS regression results for cross-section of *CARs* as dependent variable against the well defined categories of activism for various event windows. Following the specification of [Maier et al. \(2011\)](#), the crisis dummy is set to 1 if the observation falls in the period from July 2007 to December 2013. We incorporate crisis dummy. All regression control for size of firm, industry and year fixed effects. Firm size (logarithm of market capitalization), and long-term debt (ratio of natural logarithm of long term debt to the sum of natural logarithm of total debt and market value of equity) are deviated from median value. The activism categories are general undervaluation, capital structure, business strategy, sale of the target firm, corporate governance, and Chapter 11. All categories are non-mutually exclusive. The types of activism are dummies which take value 1 if an activist explicitly states its objective to intervene in firm with pre-specified purpose. The cumulative abnormal returns are regressed into four separate models with multiple event windows of (-20,+5), (-10,+10), (-10,+5), and (0, +15). The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% level of statistical significance.

<i>VARIABLES</i>	<i>Dependent Variable</i>			
	<i>Cumulative Abnormal Returns on Different Event-Windows</i>			
	<i>CARs</i> (-20, +5)	<i>CARs</i> (-10, +5)	<i>CARs</i> (-10,+10)	<i>CARs</i> (0,+15)
Crisis	0.102*** (0.030)	0.119*** (0.023)	0.124*** (0.025)	0.139*** (0.029)
<i>MV</i>	-0.013** (0.006)	-0.011* (0.006)	-0.013* (0.006)	-0.015** (0.006)
<i>LEV</i>	0.141*** (0.051)	0.040 (0.040)	0.049 (0.039)	0.083 (0.051)
General Undervaluation	-0.052 (0.044)	-0.004 (0.040)	-0.043 (0.041)	-0.045 (0.045)
Capital Structure	0.023 (0.061)	-0.019 (0.061)	-0.019 (0.063)	0.004 (0.067)
Business Strategy	0.033 (0.036)	0.048 (0.034)	0.050 (0.037)	0.013 (0.039)
Target Sale	0.001 (0.065)	0.047 (0.058)	0.041 (0.053)	0.036 (0.071)
Governance	-0.037 (0.045)	-0.017 (0.042)	-0.029 (0.047)	-0.034 (0.046)
Chapter 11	-0.043 (0.075)	-0.062 (0.064)	-0.079 (0.064)	-0.150** (0.071)
Year	Y	Y	Y	Y
Industry	Y	Y	Y	Y
Observations	355	355	355	355
Adjusted R-squared	0.095	0.172	0.165	0.104

**Table 15: Cross-section of  $CARs$  and activism types – Crisis interactive terms**

This table reports the OLS regression results for the cross-section of  $CARs$  as dependent variable against the well-defined categories of activism for various event windows. Following the specification of [Maier et al. \(2011\)](#) study, the crisis dummy is set to 1 if the observation falls in the period from July 2007 to December 2013. To assess the crisis effect, we create crisis interaction dummies for each category. All regression control for the size of firm, industry and year fixed effects.  $MV$  (logarithm of market capitalization), and  $LEV$  (ratio of the natural logarithm of long-term debt to the sum of the natural logarithm of total debt and market value of equity) have deviated from mean value. The activism categories are General Undervaluation, Capital Structure, Business Strategy, Target Sale, Corporate Governance, and Chapter 11. All categories are non-mutually exclusive. The types of activism are dummies which take value 1 if an activist explicitly states its objective to intervene in a firm with pre-specified purpose. The cumulative abnormal returns are regressed into four separate models with multiple event windows of (-20,+5), (-10,+10), (-10,+5), and (0, +15). The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% level of statistical significance.

<i>Variables</i>	<i>Dependent Variable</i>			
	<i>Cumulative Abnormal Returns on Different Event-Windows</i>			
	<i>CARs (-20, +5)</i>	<i>CARs (-10, +5)</i>	<i>CARs (-10, +10)</i>	<i>CARs (0, +15)</i>
<i>MV</i>	-0.012* (0.006)	-0.011* (0.006)	-0.011* (0.006)	-0.014** (0.007)
<i>LEV</i>	0.131*** (0.048)	0.041 (0.039)	0.041 (0.039)	0.085 (0.051)
General Value* Crisis	0.043 (0.031)	0.081*** (0.025)	0.081*** (0.025)	0.078** (0.032)
Capital Structure* Crisis	0.122 (0.097)	0.001 (0.089)	0.001 (0.089)	0.132 (0.105)
Business Strategy* Crisis	0.134** (0.059)	0.137** (0.061)	0.137** (0.061)	0.124* (0.067)
Target Sale* Crisis	0.070 (0.066)	0.092 (0.057)	0.092 (0.057)	0.131* (0.071)
Governance* Crisis	0.025 (0.055)	0.050 (0.054)	0.050 (0.054)	0.042 (0.062)
Chapter 11* Crisis	0.097* (0.052)	0.053 (0.042)	0.053 (0.042)	0.019 (0.049)
Year	Y	Y	Y	Y
Industry	Y	Y	Y	Y
Observations	355	355	355	355
Adjusted R-squared	0.091	0.170	0.170	0.092

**Table 16: Cross-section of  $CARs$  and activism types with crisis interactive terms using full model specification**

We regress  $CARs$  obtained from multiple event-windows against types of activism with crisis interactive terms in three separate models. Following the specification of [Maier et al. \(2011\)](#), the crisis dummy is set to 1 if a firm is targeted during the period from July 2007 to December 2013. In the model I, column (1), we regress  $CARs$  for 26 days using full specifications including crisis, industry and year fixed effects. For column (2), we do not include crisis since it is highly correlated with types of activism, and year fixed effects. In column (3), we do not include crisis dummy, industry, and year fixed effects. We exercise similar model specifications for  $CARs$  for (-10, +5), and (-10, +10) event-windows. All regressions control for size and leverage which are not reported for the sake of space. The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% level of statistical significance.

<i>Independent Variables</i>	<i>CARs(-20, +5)</i>		<i>CARs(-10, +5)</i>			<i>CARs(-10, +10)</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Gen. Undervaluation	-0.032 (0.052)	-0.090** (0.045)	-0.011 (0.032)	-0.015 (0.045)	-0.062 (0.041)	0.019 (0.029)	-0.027 (0.053)	-0.107** (0.049)	-0.007 (0.035)
Capital Structure	0.044 (0.062)	0.003 (0.069)	0.030 (0.065)	0.015 (0.078)	-0.006 (0.077)	0.027 (0.074)	0.016 (0.082)	-0.034 (0.084)	0.004 (0.079)
Business Strategy	-0.013 (0.048)	-0.045 (0.044)	0.000 (0.042)	0.005 (0.037)	-0.030 (0.035)	0.016 (0.035)	-0.016 (0.049)	-0.064 (0.045)	-0.010 (0.044)
Target Sale	0.004 (0.063)	-0.024 (0.078)	0.001 (0.069)	0.037 (0.070)	0.019 (0.075)	0.036 (0.062)	0.026 (0.066)	-0.012 (0.087)	0.022 (0.074)
Governance	-0.043 (0.054)	-0.053 (0.062)	-0.010 (0.061)	-0.051 (0.046)	-0.061 (0.042)	-0.019 (0.041)	-0.042 (0.060)	-0.060 (0.066)	-0.013 (0.064)
Chapter 11	-0.027 (0.093)	0.016 (0.071)	0.013 (0.046)	-0.054 (0.091)	-0.000 (0.062)	0.032 (0.047)	-0.144 (0.096)	-0.080 (0.070)	-0.057 (0.050)
Crisis	0.114 (0.114)	- -	- -	0.020 (0.100)	- -	- -	0.145 (0.125)	- -	- -
Gen. Value* Crisis	0.035 (0.083)	0.061* (0.034)	0.061* (0.034)	0.022 (0.078)	0.092*** (0.027)	0.092*** (0.026)	0.035 (0.089)	0.097*** (0.035)	0.094*** (0.035)
Capital Structure* Crisis	0.005 (0.129)	0.070 (0.116)	0.068 (0.107)	0.068 (0.126)	0.026 (0.114)	0.037 (0.103)	0.028 (0.141)	0.107 (0.128)	0.106 (0.121)
Bus. Strategy* Crisis	0.079 (0.074)	0.155** (0.071)	0.126* (0.072)	0.090 (0.071)	0.151** (0.068)	0.123* (0.071)	0.058 (0.081)	0.159** (0.077)	0.128 (0.079)
Target Sale* Crisis	0.021 (0.111)	0.045 (0.091)	0.064 (0.090)	0.002 (0.103)	0.038 (0.084)	0.063 (0.080)	0.005 (0.122)	0.082 (0.101)	0.101 (0.095)
Governance* Crisis	0.019 (0.084)	0.038 (0.084)	0.027 (0.081)	0.069 (0.084)	0.084 (0.068)	0.073 (0.071)	0.022 (0.094)	0.054 (0.089)	0.050 (0.087)
Default* Crisis	-	-	-	-	-	-	-	-	-
Industry	Y	Y	N	Y	Y	N	Y	Y	N
Year	Y	N	N	Y	N	N	Y	N	N
Observations	355	355	355	355	355	355	355	355	355
Adjusted R-squared	0.184	0.089	0.064	0.224	0.169	0.119	0.191	0.092	0.065

**Table 17: Long-term performance in target firms – Time series analysis**

We report the results obtained from using propensity score matching approach in time-series setting. Target firms are matched with industry peers based on firm characteristics, 2-digit SIC codes in a similar year using propensity score. The dependent variable is the net difference between the firm characteristic in the year after activism minus year before activism. The independent variable is a dummy taking value 1 if a firm is targeted in the year before activism, 0 otherwise. The coefficient on *Activism Dummy* is interpreted as the average effect of activism after one year. For each regression, we use a vector of control variables including industry, and year fixed effects. Firm characteristics are well-defined in Appendix table 1. The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% level of statistical significance.

<i>Independent Variable</i>	<i>Dependent Variable</i>										
	<i>Change in firm characteristic one year after activism</i>										
	<i>Size</i>		<i>Valuation</i>		<i>Operational Efficiency</i>		<i>Distribution</i>		<i>Investment</i>		<i>Profitability</i>
	MV	Sales	Q	BM	Growth	Cash	DY	Payout	R&D	CapEx	Profit Margin
<i>ATET</i>											
Activism Dummy	-685.6 (741.0)	52.27 (568.0)	-2.139 (1.460)	-0.876 (0.625)	-0.287 (0.393)	-0.227*** (0.0804)	-0.484 (0.383)	-2.552 (4.653)	-0.0765 (0.0847)	1.727*** (0.505)	10.33* (5.692)
# Observations	121	122	118	121	115	51	188	102	97	110	113

**Table 18: Long-term performance of target firms after activism – Cross-sectional analysis**

The following table presents one-year performance in target firms using propensity score approach in the cross-sectional setting. Each target firm is matched with a nontarget firm using propensity score. The dependent variable is a change in the firm characteristic in excess of matching firm in one year after the activism. The independent variable is *Activism Dummy* which takes value 1 if a firm has been targeted in the year before activism. To control for fixed effects, we include firm size both in linear and quadratic form, industry, and year dummies. We winsorize size variable at standard 1%. The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% level of statistical significance.

		<i>Dependent Variable</i>															
		<i>Change in firm characteristic after one year compared to matching firm</i>															
		Size			Valuation			Profitability			Leverage			Distribution		Investment	
<i>Ind. Variable</i>		MV	Sales	Assets	Q	BM	Growth	ROA	Profit	LEV	ML	Cash	Divid. Yield	Payout	CapEx	R&D	
<i>ATET</i>																	
Activism Dummy		1,739.880*	79.750	-757.301	-3.958	2.972*	-1.119	53.456**	12.686	-2.439	-0.385*	-0.418	-0.900	-1.812	1.792	0.010	
		(1,041.461)	(293.164)	(466.532)	(4.113)	(1.615)	(0.949)	(21.125)	(11.605)	(1.777)	(0.230)	(0.468)	(0.628)	(7.109)	(17.662)	(0.136)	
# Observations		77	121	116	102	91	61	88	78	75	33	117	83	91	61	74	

**Table 19: Characteristics of targets in first year post-activism — Time series analysis**

The table reports the characteristics of target firms for the year after activism and compares it with a matching sample based on size/book-to-market/2-digit SIC industry. The sample consists of 551 firms targeted by 112 hedge funds over the period of 2000 to 2013. The Market Value is a firm's stock price times number of shares outstanding and measured in dollars. Sales represent a firm's annual sales in dollars. Tobin's  $Q$  is defined as (long-term debt + the market value of equity/ long term debt + the book value of equity). The Book-to-Market ratio is expressed as the book value of equity/market value of equity. Sales Growth is the annual percentage growth in sales. Book Leverage is defined as debt/(debt + book value of equity), Leverage is measured total debts / total equity, Market Leverage is defined as debt/ (debt + market value of equity), Cash as a percentage of assets is defined (cash + cash equivalents)/assets, Dividend Yield is defined as (common dividend + preferred dividend)/(market value of common stock + market value of preferred stock), Payout is defined as total dividend / net income before extraordinary items, Capital Expenses are measured as a percentage of assets, Research and Development is measured as a percentage of assets, Profitability is operating profit margin and measured as EBIT / Net sales. The entire set of data is derived from Thomson Reuters DataStream. We report the mean, median, and standard deviation for both target and nontarget samples. Column VII exhibits the difference in medians between the target and matched firm, and column VIII reports the p-value to demonstrate the level of significance in medians. All variables are winsorized at 1%.

Characteristics	Target firms			Matching firms			Median comparison <sup>1</sup>	
	Mean	Median	Sd.	Mean	Median	Sd.	Difference	p-val
Market Value (\$mil.)	982.66	257.78	2,332.29	828.22	194.16	2,032.86	63.62	0.0675
Sales (\$mil.)	880.09	273.44	1,672.67	550.80	66.35	1,172.26	207.09	0.0000
Tobin's $Q$	2.90	1.48	6.28	3.15	1.57	8.42	-0.090	0.4687
Book-to-market	-2.74	0.48	41.01	0.18	0.47	5.63	0.01	0.0000
Growth	1.10	1.02	0.81	1.15	1.07	1.06	-0.05	0.3178
ROA	-0.10	0.03	0.76	-20.42	0.00	74.41	0.03	0.0037
Book Leverage	0.58	0.31	1.77	1.58	0.91	3.74	-0.6	0.0000
Leverage	0.32	0.24	0.41	0.33	0.19	0.71	0.05	0.1913
Market Leverage	0.27	0.21	0.27	0.19	0.03	0.25	0.18	0.0005
Cash (% Assets)	0.14	0.07	0.17	0.30	0.18	0.27	-0.11	0.0000
Dividend Yield	0.46	0.00	1.35	0.01	0.00	0.06	0.00	0.0143
Payout	6.09	0.00	17.19	3.51	0.00	13.55	0.00	0.2740
Capital Exp.	4.14	1.90	6.52	42.86	2.12	99.27	-0.22	0.1573
R&D	0.10	0.01	0.24	0.13	0.01	0.27	0.00	0.0916
Profit	-1.90	0.04	12.07	0.86	1.00	1.93	-0.96	0.0000
Assets (\$mil.)	1,466.47	297.97	4,209.40	906.89	114.48	2,774.57	183.49	0.0001
Liquidity	8.83	2.06	60.39	3.39	2.03	4.63	0.030	0.8697

<sup>1</sup> Wilcoxon signed rank test for differences in medians between the target and the matched firms.



**Table 20: Changes in characteristics in year before and after activism — Cross-sectional analysis**

This table presents the difference in medians of targets and nontargets in year before and after activism. The targets are matched with peers based on size/book-to-market/2-digit SIC industry. The sample consists of 551 firms targeted by 112 hedge funds over the period of 2000 to 2013. The entire set of data is retrieved from using Thomson Reuters Datastream. We report the mean, median, and standard deviation for both target and nontarget samples. Column I and II report the differences in means and medians for targets, column III and IV presents differences in means and medians for nontarget firms. Column V exhibits the difference in change in medians and VI reports the Wilcoxon signrank test p-values to demonstrate level of significance in medians. All variables are winsorized at 1%.

Characteristics	Target firms		Matching firms		Median comparison <sup>1</sup>	
	(After-Before Activism)		(After-Before Activism)		$\Delta$ Difference	Wilcoxon signrank test p-val
	$\Delta$ Mean	$\Delta$ Median	$\Delta$ Mean	$\Delta$ Median		
$\Delta$ Market Value (mil.)	-5.20	0.00	108.00	76.17	-76.17	0.2565
$\Delta$ Sales (mil.)	10.87	-5.76	62.88	26.01	-31.77	0.6875
$\Delta$ Tobin's Q	0.34	-0.070	-1.02	-0.80	0.73	0.0282
$\Delta$ Book-to-market	-1.64	0.03	-1.55	-0.04	0.07	0.0085
$\Delta$ Growth	-0.01	-0.02	-5E+14	-0.05	0.03	0.0190
$\Delta$ ROA	-0.06	0.00	20.24	-0.01	0.01	0.0510
$\Delta$ Book Leverage	0.12	0.02	0.55	-0.14	0.16	0.3148
$\Delta$ Leverage	-0.51	-0.03	0.08	-0.03	0.00	0.2112
$\Delta$ Market Leverage	0.01	0.02	-0.01	0.03	-0.01	0.7394
$\Delta$ Cash (% Assets)	-0.01	-0.01	0.00	0.03	-0.04	0.7275
$\Delta$ Dividend Yield	0.01	0.00	0.01	0.00	0.00	0.8139
$\Delta$ Payout	6.09	0.00	-3.34	0.00	0.00	0.7749
$\Delta$ Capital Exp.	4.01	1.89	-42.74	-2.11	4.00	0.0108
$\Delta$ R&D	0.00	-0.01	-0.01	0.00	-0.01	0.8347
$\Delta$ Profit	0.72	0.00	-7.18	-0.99	0.99	0.0000
$\Delta$ Assets (mil.)	40.26	-58.64	12.15	5.95	-64.59	0.9341

<sup>1</sup> Wilcoxon signed rank test for differences in medians between the target and the matched firms.

**Table 21: Impact of crisis on target firms performance – time series analysis**

The table reports the difference in medians between two sub-groups in target firms before and after the crisis period. For pre-crisis period, we include all firms targeted during 2000 to 2006. For post-crisis period, we include firms targeted within 2007 to 2013. The data on accounting measures is retrieved from using Thomson Reuters Datastream. We report the mean, median, and standard deviation for both subsamples. Column I to III report the mean, median, and standard deviation for target firms before crisis period, and from column IV to VI mean, median, and standard deviation for target firms during and after crisis period are presented. Column VII exhibits the difference in medians and VIII reports the Wilcoxon signedrank test p-values to demonstrate level of significance in medians. All variables are winsorized at 1%. Firm characteristics are well-defined in Appendix table ??.

Characteristics	Post-crisis target firms			Pre-crisis target firms			Median comparison <sup>1</sup>	
	Mean	Median	Sd.	Mean	Median	Sd.	Difference	p-val
Market Value (\$mil.)	5.77	5.61	2.12	5.27	5.28	1.83	0.33	0.0877
Sales (\$mil.)	5.81	5.91	2.38	5.55	5.70	1.87	0.21	0.0861
Tobin's Q	1.88	1.51	2.08	1.72	1.41	1.17	0.1	0.7609
Book-to-Market	0.58	0.52	1.54	0.53	0.51	1.05	0.01	0.4527
Growth	1.15	1.05	0.62	1.12	1.04	0.44	0.01	0.8995
ROA	-0.22	0.01	1.04	-0.00	0.05	0.20	-0.04	0.0092
Book Leverage	0.54	0.37	1.03	0.47	0.39	0.54	-0.02	0.7567
Leverage	2.74	1.97	2.34	0.31	0.28	0.27	1.69	0.0000
Market Leverage	0.31	0.21	0.30	0.34	0.27	0.30	-0.06	0.2653
Cash (% Assets)	0.68	0.08	2.05	0.70	0.01	2.53	0.07	0.1123
Dividend Yield	0.30	0.00	0.87	0.54	0.00	1.32	0.00	0.0260
Capital Exp.	5.95	2.43	11.72	0.05	0.03	0.07	2.4	0.0000
R&D	0.15	0.02	0.38	0.04	0.00	0.11	0.02	0.0020
Profit	-0.50	0.03	1.80	-0.11	0.05	1.16	-0.02	0.0059
Assets (\$mil.)	6.23	6.34	2.17	5.92	5.93	1.52	0.41	0.0297

<sup>1</sup> Wilcoxon signed rank test for differences in medians between the target and the matched firms.

**Table 22: Impact of crisis on target firms performance — Cross-sectional analysis**

The table reports the difference in medians between two sub-groups in target firms before and after the crisis period in excess of matching sample firms. We compare target firms with matching sample firms based size/book-to-market value/ 2-digit *SIC* industry codes. For pre- crisis period, we include all firms targeted during 2000 to 2006. For post-crisis period, we include firms targeted within 2007 to 2013. The data on accounting measures is retrieved from using Thomson Reuters Datastream. We report difference in means, medians, and standard deviations for both subsamples. Column I to III report the difference in means, medians, and standard deviations for target firms for the period ((2007–13) - (2000–06)) and from column IV to VI difference in means, medians, and standard deviations for nontarget firms for the period during ((2007–13) - (2000–06)). Column VII exhibits the difference in medians and VIII reports the Wilcoxon signedrank test p-values to demonstrate level of significance in medians. All variables are winsorized at 1%. Firm characteristics are well-defined in Appendix table ??.

Characteristics	Target firms			Matching firms			Median comparison <sup>1</sup>	
	$\Delta$ Mean	$\Delta$ Median	$\Delta$ Sd	$\Delta$ Mean	$\Delta$ Median	$\Delta$ Sd	$\Delta$ Difference	Wilcoxon signrank test p-val
$\Delta$ Market Value (mil.)	1.26	1.64	2.89	0.29	0.24	2.43	1.40	0.0164
$\Delta$ Sales (mil.)	1.17	1.21	3.51	1.20	0.81	3.20	0.40	0.8490
$\Delta$ Tobin's Q	0.36	0.29	2.70	-1.12	-0.37	2.97	0.66	0.0023
$\Delta$ Book-to-market	0.56	0.50	1.55	0.51	0.51	1.04	-0.01	0.4679
$\Delta$ Growth	-0.21	-0.05	1.72	-0.11	0.01	1.21	-0.06	0.9916
$\Delta$ ROA	-0.22	-0.01	1.13	-0.03	0.04	0.22	-0.05	0.0860
$\Delta$ Book Leverage	0.52	0.36	1.04	-0.69	0.00	1.89	0.36	0.0000
$\Delta$ Leverage	2.29	1.60	2.49	0.06	0.07	0.41	1.53	0.0000
$\Delta$ Market Leverage	0.10	0.10	0.40	0.17	0.13	0.39	-0.03	0.2419
$\Delta$ Cash (% Assets)	0.43	-0.11	2.56	0.02	-0.11	1.08	0.00	0.4997
$\Delta$ Dividend Yield	0.36	0.00	0.95	0.50	0.00	1.26	0.00	0.1898
$\Delta$ Capital Exp.	4.10	2.37	5.07	-0.03	-0.00	0.14	2.37	0.0000
$\Delta$ R&D	0.02	0.00	0.54	-0.05	0.00	0.22	0.00	0.3841
$\Delta$ Profit	-1.75	-1.10	2.33	-1.32	-0.98	1.86	-0.12	0.8367
$\Delta$ Assets (mil.)	1.16	1.32	2.86	1.14	1.00	2.41	0.32	0.4459

<sup>1</sup> Wilcoxon signed rank test for differences in medians between the target and the matched firms.

**Table 23: Performance of target firms before and after the crisis – Time series analysis**

We regress change in characteristics in firms targeted during 2006 and 2007 after two years of activism (i.e., in years 2008 and 2009) against a set of dummies and vector of control specifications. In vector of dummies we include '*Fund Presence in Year<sub>t</sub>* – is dummy which is equal to 1 if an activist exists in target firm in first year of activism. *Fund Presence in Year<sub>t+1</sub>* – is dummy which takes value 1 if activist fund exists in target firm in second year of activism. *Activist Hedge Fund* – is dummy which is equal to 1 if another activist fund (fund out of sample) targets the firm during 2006 and 2007. In vector of control variables, we include firm size which is measured as natural logarithm of market capitalization. Firm age is measured using Compustat definition; firm year minus year of first stock price and incorporated into the model in natural logarithm form. *Q* and Book/Market value indicate firm valuation, *ROA* and Profit Margin show firm profitability, debt capacity is represented by Book Leverage, firm distribution policy is illustrated by Dividend Yield, and investment in target firm is measured by means of Research and Development, and Capital Expenditure. All regressions control for industry and year fixed effects. The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*\*\*, \*\*, \* indicates the 1%, 5%, and 10% level of statistical significance.

<i>Variables</i>	<i>Valuation</i>		<i>Profitability</i>		<i>Debt</i>	<i>Distribution</i>	<i>Investment</i>	
	Q	Book/Market	ROA	Profit Margin	Book Leverage	Divid. Yield	R&D	Capital Exp.
Fund Presence in Year <sub>t</sub>	-1.332 (1.431)	1.430 (1.761)	0.711** (0.305)	1.636* (0.865)	0.108 (0.414)	0.264 (0.334)	0.463* (0.227)	0.052 (0.050)
Fund Presence in Year <sub>t+1</sub>	1.086 (0.845)	-0.006 (0.629)	-0.171 (0.178)	-0.215 (0.183)	-0.174 (0.271)	-0.468** (0.178)	-0.338* (0.192)	-0.005 (0.021)
Activist Hedge Fund	-0.571 (0.668)	-1.131 (0.904)	0.120 (0.194)	0.262 (0.282)	0.176 (0.310)	0.070 (0.132)	0.222 (0.199)	-0.017 (0.020)
MV	-0.319 (0.313)	-0.248 (0.477)	-0.091 (0.081)	-0.246 (0.209)	0.167 (0.126)	0.021 (0.075)	-0.044 (0.096)	-0.001 (0.010)
Firm Age	1.546 (1.083)	-1.695 (1.371)	-0.253 (0.201)	-0.784 (0.624)	0.119 (0.266)	-0.534*** (0.184)	-0.096 (0.194)	0.004 (0.025)
Constant	-6.012 (3.495)	5.389* (2.920)	-0.022 (0.463)	0.481 (1.079)	0.240 (0.553)	1.772*** (0.426)	-0.054 (0.572)	-0.105 (0.073)
Industry	Y	Y	Y	Y	Y	Y	Y	Y
Year	Y	Y	Y	Y	Y	Y	Y	Y
Observations	26	30	30	29	30	30	26	30
Adjusted R-squared	0.098	0.355	-0.069	0.168	-0.128	0.525	-0.125	0.184

**Table 24: Performance of target firms before and after the crisis – Cross-sectional analysis**

The table reports the estimates for net change in characteristics in firms targeted in 2006 and 2007 after two years of fund activism (i.e., in years 2008 and 2009) against a set of dummies and vector of control specifications. In vector of dummies we include '*Fund Presence in Year<sub>t</sub>*' – which is equal to 1 if an activist exists in target firm in first year of activism. *Fund Presence in Year<sub>t+1</sub>* – is dummy which takes value 1 if activist fund exists in target firm in second year of activism. *Activist Hedge Fund*– is dummy which is equal to 1 if another activist fund (fund out of sample) targets the firm during 2006 and 2007. In vector of control variables, we include firm size which is measured as natural logarithm of market capitalization. Firm age is measured using Compustat definition which is firm year minus year of first stock price and incorporated into the model in natural logarithm form. We regress two separate models for each firm characteristic; first with industry and year fixed effects, second, without industry and year effects. Variables with subscript *ind* indicates the results without industry and year dummies in regression. *Q* and Book/Market value indicate firm valuation, *ROA* and Profit Margin show firm profitability, debt capacity is represented by Book Leverage, firm distribution policy is illustrated by Dividend Yield, and investment in target firm is measured by means of Research and Development, and Capital Expenditure. The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*\*\*, \*\*, \* indicates the 1%, 5%, and 10% level of statistical significance.

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<i>Independent Variables</i>	<i>Profitability</i>				<i>Valuation</i>				<i>Debt</i>		<i>Investment</i>			
	ROA	ROA <sub>ind</sub>	Profit	Profit <sub>ind</sub>	Q	Q <sub>ind</sub>	BM	BM <sub>ind</sub>	BL	BL <sub>ind</sub>	RD	RD <sub>ind</sub>	CapEx	CapEx <sub>ind</sub>
Fund Presence in Year <sub>t</sub>	0.36 (2.23)	-0.21 (1.12)	4.39* (2.12)	-0.59 (1.71)	0.67 (0.77)	0.23 (0.38)	0.97 (1.01)	0.85 (0.55)	-0.88 (1.03)	-0.81 (0.67)	0.88* (0.45)	0.38 (0.28)	0.11 (0.09)	0.21* (0.10)
Fund Presence in Year <sub>t+1</sub>	-0.84 (1.41)	-0.72 (0.93)	-0.79 (1.43)	0.28 (1.11)	0.18 (0.37)	0.48 (0.47)	0.48 (0.41)	0.53 (0.33)	-0.70 (0.52)	-0.44 (0.41)	-0.45 (0.28)	-0.35 (0.34)	-0.03 (0.05)	-0.03 (0.04)
Activist Hedge Fund	-0.37 (1.10)	-0.01 (0.89)	0.57 (1.44)	-0.98 (1.50)	-0.03 (0.61)	-0.13 (0.35)	-0.39 (0.37)	-0.47 (0.30)	-0.21 (0.73)	-0.31 (0.42)	0.69 (0.58)	0.29 (0.39)	-0.06 (0.05)	-0.03 (0.03)
MV	-0.78 (0.91)	-0.43 (0.51)	-1.67 (1.04)	-0.71 (0.61)	-0.38 (0.57)	-0.24 (0.32)	0.16 (0.24)	0.14 (0.19)	-0.31 (0.31)	-0.36 (0.21)	0.05 (0.31)	0.08 (0.16)	0.01 (0.02)	-0.00 (0.02)
Firm Age	0.84 (1.35)	0.87 (0.98)	-2.67* (1.48)	-0.43 (1.03)	0.12 (0.42)	0.29 (0.46)	0.02 (0.65)	0.18 (0.48)	-0.56 (0.59)	-0.35 (0.42)	-0.42 (0.28)	-0.12 (0.27)	0.08 (0.05)	0.04 (0.04)
Constant	-4.13 (3.84)	-2.52 (2.58)	2.89 (4.70)	0.81 (2.90)	-2.04 (2.85)	-0.93 (1.15)	0.22 (1.58)	-0.28 (1.28)	1.80 (1.55)	1.81 (1.15)	1.28 (1.78)	0.03 (0.69)	-0.37** (0.15)	-0.29** (0.13)
Industry	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Year	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
# Observations	25	25	30	30	30	30	29	29	30	30	26	26	30	30
Adjusted R-squared	-0.30	-0.05	0.11	-0.01	-0.19	-0.01	-0.09	0.10	0.14	0.10	-0.17	-0.03	0.19	0.18

**Table 25: Abnormal returns and types of activism – Impact of large holding in firm**

The table reports the coefficients for types of activism by regressing *CARs* obtained from multiple event-windows. We present type of activism using dummy which takes value one if an activist fund explicitly describes its purpose of the transaction in Schedule 13D filing. Variable 13F is a dummy which is equal to 1 if a fund holds more than \$1 million in target firm before filing Schedule 13D to the SEC of the US. The variable pre-activism return presents the six-months daily average returns' performance prior to Schedule 13D filing. The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*, \*\*, \*\*\* illustrate 10%, 5%, and 1% level of statistical significance.

<i>Independent Variables</i>	<i>Dependent Variables</i>		
	Cumulative abnormal returns on different event-windows		
	CARs (-20, +5)	CARs (-10, +5)	CARs (0, +15)
LMV	0.004 (0.009)	0.000 (0.006)	-0.003 (0.006)
LTD	0.156*** (0.052)	0.038 (0.037)	-0.009 (0.037)
Pre-activism Return	4.594 (4.765)	-0.910 (3.412)	-5.348* (3.412)
13F	0.003 (0.032)	-0.002 (0.023)	-0.021 (0.023)
General Undervaluation	0.072* (0.054)	0.049** (0.038)	0.046* (0.036)
Capital Structure	0.041** (0.076)	0.002** (0.054)	0.053* (0.049)
Business Strategy	0.026** (0.047)	0.023** (0.034)	0.024** (0.032)
Target Sale	-0.027 (0.077)	0.033 (0.055)	0.005 (0.051)
Governance	-0.043 (0.057)	-0.058 (0.041)	-0.058 (0.027)
Chapter 11	-0.056 (0.287)	-0.128 (0.206)	0.352** (0.177)
Industry	Y	Y	Y
Year	Y	Y	Y
Observations	324	324	297
Adjusted R-squared	0.170	0.237	0.100

**Table 26: Size and leverage effect on cross-section of abnormal returns during crisis period**

We regress multiple event-windows against a set of activism types with crisis interaction terms. Types of activism and crisis are presented by means of a dummy. Crisis period covers from July 2007 to December 2013. We do not report vector of control variables which includes size, leverage, average 6-months daily pre-activism returns, Schedule 13F, industry and year fixed effects for the sake of space. Firm size and leverage are in natural logarithmic form and demeaned. The standard errors are adjusted for heteroskedasticity and reported in parentheses for each coefficient. \*\*\*, \*\*, \* demonstrate 1%, 5%, and 10% level of statistical significance.

<i>Independent Variables</i>	<i>Dependent Variable</i>		
	<i>CARs(-20, +5)</i>	<i>CARs(-10, +5)</i>	<i>CARs(-10, +10)</i>
Crisis	0.189 (0.154)	0.128 (0.117)	0.128 (0.117)
General Undervaluation	-0.026 (0.070)	-0.005 (0.058)	-0.005 (0.058)
Capital Structure	0.044 (0.090)	-0.002 (0.109)	-0.002 (0.109)
Business Strategy	-0.014 (0.069)	0.006 (0.048)	0.006 (0.048)
Target Sale	-0.022 (0.085)	0.046 (0.085)	0.046 (0.085)
Governance	-0.056 (0.083)	-0.064 (0.061)	-0.064 (0.061)
Chapter 11	-	-	-
General Value* Crisis	-0.094 (0.116)	-0.102 (0.094)	-0.102 (0.094)
Capital Structure* Crisis	0.011 (0.133)	0.003 (0.127)	0.003 (0.127)
Business Strategy* Crisis	0.148 (0.105)	0.077 (0.082)	0.077 (0.082)
Target Sale* Crisis	0.026 (0.148)	-0.099 (0.124)	-0.099 (0.124)
Governance* Crisis	0.004 (0.128)	-0.019 (0.092)	-0.019 (0.092)
Default* Crisis	-	-	-
General Value* Crisis* MV	-0.027 (0.019)	-0.024 (0.016)	-0.024 (0.016)
Business Strategy* Crisis* MV	0.003 (0.024)	0.010 (0.020)	0.010 (0.020)
Target Sale* Crisis* MV	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Governance* Crisis* MV	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)
Default* Crisis* MV	-0.000 (0.000)	-0.000* (0.000)	-0.000* (0.000)
Capital Structure* Crisis* Lev	0.824*** (0.296)	0.437** (0.215)	0.437** (0.215)
Default * Crisis * Lev	-	-	-
Observations	324	324	324
Adjusted R-squared	0.119	0.185	0.185