ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Master Thesis Financial Economics

The effect of hedge fund activism on the long-term performance of target companies

Do hedge funds create value for their target companies or are they subjected to myopic behavior?

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Abstract

This research provides a comprehensive analysis of the effect that activist hedge funds have on the short- and long-term performance of target companies in the United States over the period 2010 - 2014. Given the controversy surrounding the impact of hedge fund activism, and opponents claiming that hedge fund interventions are detrimental for the long-term value, this research will have an emphasis on the long-term effects. With an extensive set of performance metrics and variables, I assess whether hedge fund activism is beneficial or detrimental over a four-year horizon for target companies. I find that companies that were targeted by hedge funds, tend to underperform in terms of stock returns as well as operational performance. Further, the empirical results show that target companies experience an increase in the short-term abnormal stock returns surrounding the activist intervention. Moreover, the long-term abnormal stock returns experience a positive increase during the research horizon but are not significant. Next, the empirical results show sufficient evidence to support the notion that hedge fund activism increases value in terms of the widely applied measures of operating performance, Return on Assets, and Tobin's Q for target companies. Lastly, I examine if hedge funds are subject to myopic behavior. I use several proxies that indicate myopic behavior and find some evidence in the results. However, the general notion that hedge funds destruct long-term value by focusing on short-term gains, cannot be supported by this research.

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1. Introduction

Earlier this year (2020) a header of an article in the financial times said: "Companies faced more activist investors than ever in 2019". The article stated that 2019 was a record year for new shareholder activists who were willing to take a public stand against the management of the company in which they have a significant stake. Even more recently, one of the largest insures in the Netherlands, the NN Group, has been a target of such an activist event. One of the US largest activist hedge funds, Elliott Management, also known for their high-profile campaigns with Akzo Nobel and AT&T, took a stake in the Dutch insurer earlier this year (Fletcher & Ralph, 2020). Elliot publicized an extensive presentation, where they unveiled a list of demands in opposition to the management. In the presentation, they actively sought support of other shareholders in order to impose significant changes in the operations of the Dutch insurer. Elliott claimed that the share price is severely undervalued and in order to maximize the value, the NN Group needs to spin-off assets, invest in riskier assets and cut costs. What triggered Elliott, was that they think management is not maximizing a company's potential. This agency problem that arises by the separation of ownership and control, provides the foundation for activism to exist.

This is one of the many examples of recent well-known shareholder activist campaigns, where large shareholders aim to enhance company value by imposing demands for change. Other large and influential companies that have been a target of activist investors include Apple, Barclays, eBay. Shareholder activism represents a range of activities by which shareholders try to impose their will on a publicly listed company that are intended to result in some change in the company[1]. This can be anything, ranging from a boardroom shake-up to enforcing major changes in the strategy of a company, but the most common motives are board reforms, takeover defenses, executive compensation and confidential voting (Romano, 2001). One of the most active investor groups engaging in shareholder activism are hedge funds. They engage in another type of shareholder activism than the traditional institutional investors such as pension- and mutual funds. Hedge funds are not subject to the same regulations and therefore can hold highly concentrated positions in small numbers of companies, which enables them to influence a company's board and or management (Brav et al., 2008). Currently they are engaging in more activist campaigns than ever, and the amount of capital tied up in them, now sits at record highs (Lazard, 2019). This implies that shareholder activism has evolved the over the last past decades and became a more frequently and recurring tactic for hedge funds to employ. Companies of all sizes and industries have been a targeted and the numbers are increasing.

As the amount of companies being targeted increases, so does the amount of literature dedicated to examining the effects of activism. While most researches that study the effects of activism are more focused on a small time-horizon, relatively little is understood about the long-term impact hedge funds have on the companies they target. Moreover, there is a lot of controversy surrounding the impact of

[1] PWC *"How might the changing face of shareholder activism affect your company?",* July 2020, https://www.pwc.com/us/en/services/governance-insights-center/library/how-shareholder-activism-might-impact-your-company.html

hedge fund activism which triggered public debates and makes hedge fund activism an interesting and relevant topic. Opponents (e.g. Lipton, 2013) accuse hedge funds of being myopic investors. They claim that interventions by activist hedge funds are in the long-term detrimental for the value of the targeted companies and their long-term shareholders.

Proponents, on the other hand, see activists as desirable agents who bring much-needed change to a target. They intentionally invest in underperforming companies and unite more passive shareholders to support their demands to change the target's business model, management and/or strategy in order to increase the value (Coffee, 2017). Furthermore, Brav, Jiang & Kim (2010) wrote a review from several comprehensive researches that were conducted on this specific topic. They find that the hedge funds do create value for their shareholders. Moreover, they find that hedge fund activism generates significantly higher abnormal stock returns surrounding the announcement date than their industry peers. One of the most profound researches on the long-term effects of hedge fund activism is performed by Bebchuk et al. (2015). They are the first to look beyond the three-year scope and find positive results for both stock performance as well as operational performance. In the end, the long-term effects of hedge fund activism are still topic of debate. Therefore, with my research, I will try to provide evidence in favor or against both strands of literature. The research question is as follows:

"Do activist hedge funds create value for companies they target in the short and long-term in terms of stock and operational performance?"

This research will contribute to the existing literature in several ways. First, I focus on a more recent sample (2010 – 2014) of target companies that have not been examined yet. Second, Bebchuk et al. (2015) is one of the few and more profound researches that provides a comprehensive study on the long-term effects of hedge fund activism. In addition to Bebchuk et al. (2015), I have added another important performance metric, the cash flow generated from operations. Cash Flow from Operations (CFO) is important because it reflects the actual cash generated from a company's core operations and it reflects a company's solvency (DesJardine & Durand, 2019). Finally, I will examine an extensive set of variables which can serve as a proxy for myopic behavior, in order to address the allegations made against hedge funds of being only focused on short-term financial performance.

In order to address the question if hedge funds create value for the shareholders of the target company, I first start with performing an event study of the short stock returns surrounding the 13D schedule filing date. In line with Brav et al. (2008), I will estimate the mean Cumulative Abnormal Returns (CAR) over a 40-day time window [-20, 20]. The CAR is measured in excess of the value-weighted market index from CRSP. I find an increase in the average abnormal returns of approximately 2%. This indicates that investors perceive the activist event as positive. Interesting is that most of the increase takes place a few days before filing and a few days after. Next, as the main purpose of this research is to address the long-term effects of hedge fund activism, the long-term abnormal stock returns

are investigated as well. To test if there is any evidence for a reversal in the initial spike of short-term stock performance, I will conduct a regression analysis to retrieve the monthly alphas for every individual company in the sample. The asset pricing models used in this process are Capital Asset Pricing Model and the Fama-French Carhart Four-Factor model (Fama & French, 1993; Carhartt, 1997). The alphas will be calculated over three monthly time windows [-36, -1], [1, 24], and [1, 48]. I find that hedge fund target companies are significantly underperforming prior to the event, which is indicated by the negative alphas. Furthermore, target companies experience positive abnormal returns in both time windows after the event. Unfortunately, the results for the subsequent months after the event are not statistically significant.

The long-term effect hedge fund activism has on operating performance is measured alongside two metrics; ROA, Tobin's Q and the additional cash flow measure; CFO. All metrics are analyzed using their raw numbers and industry-adjusted numbers. In addition, I have constructed a matched sample of companies with similar characteristics. Finally, I perform a series of regression analysis that allows me to control for several variables, such as size, age, lagged time variables and fixed effects. In terms of operating performance, the target companies again underperform as compared to their industry peers. Moreover, the empirical results show that target companies experience a positive trend following the subsequent years after the event, except for CFO, which did not experience a significant change.

Finally, an extensive set of variables of strategic investments (Capex, R&D, Cash Flow from Investing activities (CFI), Dividend payout, and Debt levels), which can indicate myopic behavior, are examined. Following the same methodology used for the operating performance, I find some evidence for myopic behavior. However, the general note that hedge fund destructs long-term value by focusing on short-term gains, cannot be supported by this research.

This research proceeds as follows. Section II covers the relevant literature concerning the shareholder activism and hedge funds. In section III the sample construction and data collection are outlined. Moreover, the methodology used in this research is explained. Section IV provides the empirical results. In section V the main findings are evaluated and provides a conclusion. Section VI and VII will address several limitations and provides recommendations for future research.

2. Literature Review

The aim of this section is to provide an overview of the literature related to shareholder activism and in particular hedge fund activism. Section 2.1 covers the corporate governance that is fundamental to activism. In section 2.2 describes the rise of shareholder activism. In section 2.3 hedge funds are introduced as a new breed of activist investors. In the subsections, key findings of the relevant literature regarding the characteristics of the hedge funds targets, the short-term performance and long-term performance of the target companies. Finally, section 2.4 outlines the main critiques regarding hedge fund activism.

2.1 Corporate governance

In the early days, companies were owned and managed by the same person. These individuals were long-term minded and devoted their careers to their company. As companies grew bigger, these managers/owners started to give away some part of their ownership. This is called the separation of ownership and control in a company, in other words, the separation between managers and investors. When those two groups have different interests and beliefs about the future of the company, a conflict can arise. This is called the agency theory and lies at the heart of shareholder activism and is a widely and used framework in the field of corporate governance. Due to the separation of ownership and control, managers (agents), will have different objectives than shareholders (principals). As argued by Jensen (1976) it is generally impossible for the principal to ensure that the agent will make optimal decisions from the principal's viewpoint. However, most of the US listed companies have an extensive pool of investors, so the ownership is not centered to one person. Furthermore, to monitor management closely is costly. Therefore, no shareholder has the incentive to monitor management closely, because the benefits are divided proportionally amongst all shareholders. This gives rise to free riding (Grossman & Hart, 1980). In order to address this free-riding problem, the shareholders appoint a board of directors whose job, among others, it is to closely monitor the managers of the company. When they fail to perform their tasks, the demand for shareholder activism arises (Gillian & Starks, 2007). Dissatisfied shareholders can typically do three things according to Gillian & Starks (2007). First, they can simply sell their shares. Prior studies have shown that this can have a disciplinary effect on management that lead to changes in governance. Secondly, they can do nothing. And finally, shareholders can express their dissatisfaction by letting the board hear their 'voice'. This can variate from using the media to express dissatisfaction to engage in a proxy fight with the current management, whereas proxy fights can generally be described as a hostile control activity (Faleye, 2004). Overall, shareholder activism and their impact on corporate governance have changed in a variety of ways over the past few decades. This indicates that shareholder activism is here to stay and remains relevant.

2.2 Shareholder activism

Shareholder activism is on the rise, whereas public companies faced with more activist interventions than ever. In 2019 the number of investors engaging in activism continued to grow, with a record number of campaigns launched by new investors (Lazard, 2019). But shareholder activism is not a new phenomenon and is around for decades in the United States. In the 1980's public companies saw an increase in the involvement of institutional investors, which were at first mainly pension funds, engaging in this new corporate governance phenomenon (Gillian & Starks, 2007). Institutional investors acquired significant stakes in target companies and were pressuring boards for corporate changes or using the press to target management and board of poorly performing companies (Gillian & Starks, 2007). The ultimate goal for them was that they hoped to benefit from the appreciation in the value of the stake held by them that would result from implementing the change and then sell the shares with profit (Kahan & Rock, 2007). These institutional investors were mainly mutual funds and union funds whom entered the public market.

A prior study on the consequences of institutional activism, performed by Romano (2001), shows that the empirical evidence indicates that activist interventions have no significant impact on target company performance. Romano (2001) explains that most shareholder proposals have the same purpose, namely: reforming board composition and structure, limiting executive compensation, proposal to implement confidential voting and proposal to remove takeover defenses. Other comprehensive studies that were conducted on this particular topic (Karpoff, 2001; Wahal, 1996 and Del Guercio & Hawkins, 1999) all came to the same conclusion as Romano; there is no significant relation between shareholder proposals and improvement in target company's performance.

Currently shareholder activists can be defined, according to Gillian & Starks (2007), as "investors who are dissatisfied with some aspect of a company's management or operations that try to bring change within the company without a change in control". In light of the disappointed results of earlier studies, a new form of activism emerged which differed fundamentally from earlier activist attempts by institutional investors. In a review of several studies on shareholder activism; Denes, Karpoff & McWilliams (2016) and Goranova and Ryan (2014) find that with the rise of this new form of activism, shareholder activism has become more associated with value improvements.

2.3 Hedge funds

One of the institutional investors that are heavily employing activism in corporate governance, are hedge funds. They became a major corporate governance phenomenon that emerged in the early 2000's and are now widespread across different sectors and multiple countries worldwide. Hedge funds can generally be described alongside four characteristics according to Brav, Jiang, Partnoy and Thomas (2008) namely: "i) they are pooled, privately organized investment vehicles; ii) they are managed by professional investment managers with performance-based compensation and significant investments in the fund; iii) they are not widely available to the public; and iv) they operate outside of securities

regulation and registration requirements". Unlike mutual funds, hedge funds are exempt from regulation under the Investment Company Act of 1940. This entails, for example, that mutual funds are obliged by the law to hold a diversified portfolio, which makes it harder to acquire a meaningful stake in a company. Hedge funds on the other hand can employ a more flexible investing policy when structuring their portfolio, investing large stakes in fewer companies and using leverage to do so (Kahan & Rock, 2007). Furthermore, when compared to mutual funds executives they have a stronger incentive to perform, since their fee is depending on the performance of their portfolio companies. Hedge funds typically earn a 1.5% management fee and 20% of the fund's profits (DesJardine & Durand, 2019), which contributes to a more risk-taking investment strategy compared with other institutional investors, who have a more flat-lined management fee. This results in a more hands-on involvement of hedge fund managers, who have more incentive to push for a change in the company.

The amount of data on activist interventions in the United States are captured by the 13D filings that need to be submitted to the Security Exchange Commission (SEC). The SEC requires investors, who acquire a stake of more than 5% of any class security in a publicly traded company, and who have an intention to influence management and board, to disclose their ownership and intent within 10 days before they acquire the 5% stake (Brav, Kim & Jiang, 2015). Schedule 13D filing contains, among other things, the filing date, information about the identity of the filer, the acquisition price and, most importantly, the purpose of the investment. According to Brav et al. (2008) these purposes can be categorized in five main objectives: i) undervaluation/maximize shareholder value; ii) payout policy and capital structure; iii) business strategy decisions; iv) sale of target company and; v) governance related issues (Brav et al., 2008). If investors purchased shares in a company but do not have the intent to influence corporate control, then the SEC requires those investors to file a Schedule 13F. When pursuing these goals, hedge funds can employ different strategies which can be very different among funds. Some of those strategies are used by traditional investors as well, like shareholder proposals, direct negotiations with management and using the media to get attention for the specific matter. Other strategies for their goals, are proxy contests, litigation and outright takeover (Gillian & Sharks, 2007). These are strategies are generally accepted upon in the academic literature.

2.3.1 Characteristics of targets of Hedge Fund activism

It is evident that hedge funds are engaging in a form of shareholder activism that differs fundamentally from previous activist interventions by other institutional investors. They have become a globally active investment vehicle, which invest in companies in all different sectors. Therefore, several studies have examined whether companies possess specific characteristics which attracts the attention of hedge funds.

The general consensus is that hedge funds target companies they believe to be undervalued or poorly run. This essentially means that hedge funds can be labelled as value investors, who attempt to find underperforming companies, where the potential for improvements is substantial. Karpoff (2001) concluded, in his review of empirical results from several comprehensive studies concerning the impact

of shareholder activism on target companies, that the stock returns of the target companies are significantly lower than market returns one to four years prior to the activist intervention. Brav et al. (2008) find similar results with regard to stock returns and further examined whether target companies share specific characteristics from an operational perspective. They find that target companies generally have low market-to-book ratio when compared with their industry peers. Moreover, they find that target companies are profitable in terms of returns on assets and steady cash flow generation.

Boyson & Mooradian (2008) find that target companies are relatively small in size[2], and consent with Karpoff (2001) and Brav et al. (2008) that target companies have poor stock returns. Additionally, they find that the average target companies have a low Tobin's Q. This reflects the effectiveness of a company in turning the book value of their assets into market value available for shareholders. Finally, they conclude that "the typical target is a cash cow with poor growth prospects, possibly suffering from the agency costs of free cash flow".

Klein & Zur (2009) address the free cash flow problem, as defined by Jensen in 1986, in their paper. This theory states that companies can reduce their agency problems, by reducing excess cash, increase dividend payments, and by continuous payments to creditors. They find that hedge funds appear to target companies with initially higher levels of cash on their balance sheets. Furthermore, they find that activists tend to invest in companies with a relatively higher EBITDA/assets level. This is in line with Brav et al. (2008), but in clear contrast with the earlier performed research by Bethel et al. (1998) where they find that hedge funds were more likely to purchase shares of companies with relatively low EBITDA/assets (ROA). This aligns with Karpoff (1996) who also observes low levels of ROA for companies that are targets of shareholder proposals. This indicates that hedge fund activism is evolving and changing their investment style, hence they increasingly engage in new form of activism (Brav et al., 2008).

Finally, in a review study written by Brav, Jiang & Kim (2010), they looked at the capital structure of target companies and find that they have higher leverage than their peers. On the investment size of the target Brav, Jiang & Kim (2010) concluded that they spend less on research & development than their peers. This can be an indication for the general concerns that hedge funds only seek short-term gains in their target companies. In sum, existing literature provides a variety of characteristics that are attributable to target companies. However, there not always perfectly in line with each other. Therefore, these findings lead to the following hypothesis regarding the characteristics of target companies:

H1: Target companies tend to underperform in the year prior and in the intervention in terms of stock performance as well as operating performance

[2] Larger companies may be less appealing targets to activist funds because of the large amount of capital a hedge fund would need to invest to acquire a significant stake in company

2.3.2 Performance of target companies

Activist campaigns regularly hit the headlines of reputable newspapers and the number of companies targeted by activists also increases fast. Therefore, it is quite important to determine the consequences that hedge fund activism has on the short-term and long-term financial performance of target companies. The short-term performance has been addressed by several earlier studies, however, the long-term impact that hedge funds have on targeted companies remains relatively less understood.

Short-term performance

To address if hedge fund activism generates value for shareholders, several studies have performed event studies where they examine the short-term abnormal stock return through different time windows surrounding the 13D schedule filing date. One of the most prestigious study in this field has been conducted by Brav et al. (2008). They collected a sample of 236 activist hedge funds and 882 unique target companies, based on Schedule 13D filings, in order to identify the impact of activism on company performance. They adopt both short and long event windows around the filing of a Schedule 13D. For the short event window [-20, 20] they found an average median abnormal return of 8.4% indicating that the market anticipates hedge fund activism will result in actual value improvement.

Klein & Zur (2009) examined the effect of aggressive campaigns by entrepreneurial activists. They conduct their analysis using two samples, in which one of them consists of 151 hedge fund activist campaigns primarily conducted between 2003 and 2005. They find a significant positive market reaction around the 13D filing date of 7.2% for hedge fund targets using a [-30, 30] window. Furthermore, they have extended their window for a more long-term view to 1-year after the initial filing and activist intervention and find that hedge fund targets earn an additional 11.4% abnormal return. However, they do find that operational performance declines over the year. Klein & Zur (2009) concluded in their paper that bondholders generally lose wealth due to a decreasing average return around filing date and in the year after activist intervention.

Clifford (2008) found that companies targeted by activists earn a 3.39% excess return surrounding the filing date, which is significantly more than companies targeted by passivists (1.64% excess return). In addition, Clifford (2008) measured the operating efficiency (ROA) of target companies and saw a positive increase of 1.22% in the year after the activist's intervention. He concluded that this increase was more due to a reduction in assets than due to an increase in cash flow. Additionally, Boyson & Mooradian (2008) find a positive abnormal return of 11% surrounding the first 13D filing date using a [-25, 25] window as well. This return is particularly stronger for aggressive investors. The results for the short-term stock performance leads to my second hypothesis:

H2: short-term stock returns experience a spike in abnormal performance surrounding the event date

It is however possible that the positive abnormal returns observed in these short-term time windows are temporary and merely reflect an overreaction of the market instead of information about prospective value changes (Brav, Jiang & Kim, 2015). If this is the case, a reversal in the abnormal stock returns performance should be detected, hence the third hypothesis:

H3: long-term abnormal stock returns experience positive alphas after the hedge fund intervention

Long-term performance

While there is little debate concerning the positive short-term abnormal stock performance of target companies, literature on the long-term performance, both stock as well as operational, provides mixed results. Furthermore, the rise of hedge funds activism has caused concern among many corporate boardrooms (Clifford, 2008). Their main critique, which has been the common thread throughout the literature, is that hedge fund activists are self-seeking, short-term minded, looking for a quick profit at the expense of the company and its long-term value. Studies have examined the long-term effects of hedge fund activism and show that the impact and increase in value last beyond the intervention year. Therefore, it remains a relatively less understood topic than the short-term effects.

To observe if hedge fund activism creates lasting value for target companies as well, Boyson & Moordian (2008) examine the long-term performance by comparing changes in target and matching companies' characteristics calculated as the value in the year after activism less the value in the year before activism. For the target companies, in a one-year period, the ROA improves, Tobin's Q (the sum of the market value of equity and book value of debt, divided by the book value of equity and book value of debt) increases and when the activists are labelled as aggressive the cash flow performance also improves. In another effort to estimate the long-run effects, Clifford (2008) found that companies targeted by activists experienced an increase in ROA compared with companies targeted by passivists over a three-year period. Furthermore, he examined the long-run stock performance of those companies and found a positive and significant alpha in each of the one-year, two-year, and three-year periods. However, when comparing the monthly excess returns of companies targeted by passivists, he found no evidence that activism generates long-run abnormal returns.

Finally, a profound study conducted by Bebchuk et al. (2015) examines activist interventions over a long-term five-year window. They use an extensive dataset of approximately 2,000 interventions by hedge funds during the period from 1994 to 2007. In particular, they find evidence that when performance is indicated by Tobin's Q, the performance coefficients representing the subsequent years after interventions show an upward trend and all year dummies have a higher value than the intervention year. Bebchuk et al. (2015) conclude that there is no evidence that hedge fund activism has an adverse effect on the long-term performance of target companies. De Haan, Larcker & McClure (2019) also examines the long-term effects of interventions by activist hedge funds. They find that pre- to post activism returns are insignificantly different from zero. Moreover, they find no evidence of abnormal

performance improvements post-intervention. This clearly indicates the controversy around the long-term effect that activist hedge funds have on target companies, hence the following hypothesis:

H4: Long-term performance measures of target companies increase in the subsequent years after the intervention

2.4 Opponents of hedge fund activism and the myopic investor claim

Overall, the general consensus in the literature is that target companies enjoy large positive returns when hedge funds announce their activists' intentions to the public in the short-term stock performance. But the long-term value creation of hedge funds activism is subject of debate in the literature. Critics of such activist's interventions claimed that hedge funds are myopic investors, which means that the actions being sought are overall or on average value decreasing in the long-term even when they are profitable in the short term (Bebchuk et al., 2015). They argue that although stock and operating performance in the year following the intervention are positive, those metrics do not reflect a sustainable fundament for long-term value enhancement. This is because, the changes implemented to achieve these positive values, are through financial engineering such as shareholder distributions (e.g. dividend payments) or increased leverage and will not translate into long-term improvement.

Among those that share that view is Lipton, an American lawyer. In a Harvard law review (2013)[3] he wrote that: "U.S. companies, including well-run, high-performing companies, increasingly face: pressure to deliver short-term results at the expense of long-term value, whether through excessive risk-taking, avoiding investments that require long-term horizons or taking on substantial leverage to fund special payouts to shareholders". He added that: "These challenges are exacerbated by the ease with which activist hedge funds can, without consequence, advance their own goals and agendas by exploiting the current regulatory and institutional environment and credibly threatening to disrupt corporate functioning if their demands are not met." Lipton emphasizes what, in his eyes, the downfalls of hedge fund activism are. He argues that hedge fund activism causes management to forego on long-term investments. Desjardine & Durand (2019) define those foregone long-term investments as a decrease in the number of employees, operating expenses, R&D spending, and capital expenditures.

Hill & McDonell (2016) notes that activist investors would pressure companies to follow the "activist playbook". This again would lead to reductions in R&D spending, employees could be fired, and assets could be sold. The savings and cash are then used to repurchase shares of pay large amounts of dividends. These actions generally do not create long-term value for shareholders. In addition, Kahan & Rock (2007) find that the involvement of hedge funds in corporate governance and control raises concerns. They argue that there might be a conflict of interest between the other shareholders and hedge

[3] Martin Lipton, Wachtell, Lipton, Rosen & Katz; *Current Thoughts About Activism,* March 2020, https://corpgov.law.harvard.edu/2013/08/09/current-thoughts-about-activism/

funds. Hedge funds need to make money for their own investors; therefore, they do not consider that the consequences of their actions might have a negative effect on the other stakeholders of the target company. These negative effects that other stakeholders might experience are pointed out by Klein & Zur (2009). They find that bondholders experience negative abnormal returns following activist interventions and argue that the gains from activism merely reflect wealth transfers rather than overall value enhancement.

The long-term performance of hedge fund activists is still topic of debate, the claim that they are pursuing short-termism for quick profits is also yet to be proven and for now remains a claim by a wide range of observers with financial experience and corporate expertise[4] (Allaire & Dauphin, 2014). The last hypotheses of this research will investigate the myopic investor claim that hedge funds are be being accused of:

H5: Debt levels and the dividend payout ratio increases in the subsequent years after the intervention

H6: R&D spending, Capex and CFI activities decreases in the subsequent years after the intervention

[4] Martin Lipton, Wachtell, Lipton, Rosen & Katz; *Bite the Apple; Poison the Apple; Paralyze the Company; Wreck the Economy,* March 2020, https://corpgov.law.harvard.edu/2013/02/26/bite-the-apple-poison-the-apple-paralyze-the-company-wreck-the-economy/

3. Methodology and data

This chapter sheds light upon the data and sample construction process. First of all, the data is retrieved and processed. Second, using several criteria, I reduce the dataset to make it suitable for my research and reliable for the analysis. Moreover, the data set is examined using several descriptive statistics. Finally, now that the data set is structured, the methodology is discussed.

3.1 Dataset

For hedge fund activism there is no common, publicly available database that stores all the information regarding activist events. Therefore, Mr. Meyer provided me with an extensive dataset. This dataset contains a large amount of information regarding all the 13D filings from 1984 to 2018. Investors are required to file a 13D with the SEC within ten days of acquiring more than 5% of any class of securities of a publicly traded company if they have interest in influencing company's management. One of the benefits of this data set is that the campaign objective is included, and the outcome and the tactics employed by investors. Some of the most cited objectives are as follows: i) investors seek board representations, ii) maximize shareholder value iii) board control, and iv) a vote against a merger or an active stand to propose a merger. Tactics that activists employ must be filed in item 4 of the Schedule 13D with the SEC. Common tactics in the database include: i) nominating a slate of directors, ii) publicly disclosing a letter to the board or management (e.g., to encourage other stakeholders to support the dissident group in a proxy fight or vote against/oppose a merger), iii) engaging in a proxy fight or threat with a proxy fight or iv) proposing a binding or precatory proposal to be put on a vote during the shareholder meeting to, for example, enhance corporate governance. This aligns with the findings of Romano (2001), who also finds that governance mechanisms, such as voting against a merger, are sought primarily by activist investors. The disclosed tactics and objectives present a great advantage in determining whether the 13D filing can be classified as an activist event or that the stake is not acquired with the intention of simply holding on to it.

3.1.1 Data construction

The starting point of the sample construction procedure rests on the classification of hedge fund activism in the US (i.e. for U.S. target companies). One of the main ways in which this paper aims to contribute to the existing literature is through applying existing methodologies and determinants of post-activism performance on a recent sample of the post-crisis period; this research therefore considers companies that have been subject to activism during a period that spans from 2010 – 2014. This period excludes the disturbing effects of the financial crisis. Next, measuring long-term effects requires at least three years of accounting and financial data to derive at an appropriate conclusion. I use data regarding the operating performance of public companies through the end of 2018. In some cases, 2019 figures were not publicly disclosed at the time of writing, so the last year is 2018, which justifies the sample period.

The initial data set contains 8,840 activism events and spans from 1987 – 2018. To enhance the credibility and formulate a well-established view on the consequences of only activism that is purely sought by hedge funds, the following criteria were implemented:

- Filed a 13D schedule in 2010 - 2014
- Only U.S. based companies
- Companies with market capitalization < €1m were removed
- Companies with the SIC codes 6000 – 6799 were removed (e.g., financial institutions) due to their regulated nature and different business model
- Only activist events that involved hedge funds were included
- Combinations of hedge funds with other activist investors were removed
- 31 companies that did not have a matched CUSIP were removed

Table 1: Overview of activism events

Initial Data Set	**8,840**
13D filed 2010 - 2014	(7,301)
Country: US only	(59)
Market cap < €1m	(6)
Only hedge funds (dissidents)	(605)
Remove SIC codes 6000 - 6799	(244)
Account for combinations	(31)
31 companies that did not have a matched CUSIP were removed	(31)
Total	**563**

3.1.2 Data description

The initial data set was filtered almost identically as done by Brav et al. (2008). After all the criteria were implemented and the irrelevant observations were excluded, I arrived at my final dataset of activist hedge fund events and their target companies. The key financial and accounting data were retrieved from WRSD – Compustat North America annual fundamentals. The target companies' data were found by using their associated CUSIP code. Tables 2 – 5 are presented below and display the main characteristics of the data set.

Table 2: Descriptive statistics of the activist events and target companies

Summary Descriptives	**N**
Number of activist events	**563**
2010	111
2011	109
2012	97
2013	113
2014	133
Number of companies	**416**

Table 3: Breakdown of hedge funds engaging in activism

Hedge Funds	**N**
Hedge fund targeted 1 company	97
Hedge fund targeted >1 - 5 companies	59
Hedge fund targeted >5 - 10 companies	18
Hedge fund targeted >10 - 20 companies	4
Hedge fund targeted > 20 companies	3
Unique Hedge Funds	**181**

This empirical study examines 563 activist events and the long-term performance of 416 unique target companies that were targeted by 181 unique hedge funds that acquired a significant stake. One observation that is quite notable, is that the number of events is higher than the total number of companies in the sample. This is not surprising, given that companies can be targeted by multiple hedge funds, which creates an activist event. Moreover, it is not uncommon for hedge funds to target more than one company in the sample horizon. This can indicate consistency for using activism as a corporate governance mechanism. Among all the hedge funds, the most active ones are Icahn Associates corporation, Starboard Value and ValueAct Capital Management. Finally, the event years exhibit an increasing frequency of activist events over a five-year period, which aligns with the literature. Shareholder activism is here to stay, and the aggressive tactics of hedge funds to engage in the corporate governance of a company are becoming more mainstream. The following table presents the main reasons that hedge funds stated to engage in an activist event. The campaign types are displayed below [5]

[5] When filing a 13D schedule, the acquiror (in most cases) has to state their purpose of the transaction

Table 4: Stated reason for engaging in an activist event[6]

Campaign Type	N	*% of sample*
13D Filer - No Publicly Disclosed Activism	75	*13.3%*
Board Control	45	*8.0%*
Board Representation	204	*36.2%*
Enhance Corporate Governance	10	*1.8%*
Hostile/Unsolicited Acquisition	7	*1.2%*
Maximize Shareholder Value	144	*25.6%*
Remove Director(s), No Dissident Nominee to Fill Vacancy	4	*0.7%*
Remove Officer(s)	4	*0.7%*
Support Dissident Group in Proxy Fight	10	*1.8%*
Vote against a Management Proposal	7	*1.2%*
Vote for a Management Proposal/Support Management	1	*0.2%*
Vote for a Stockholder Proposal	14	*2.5%*
Vote/Activism against a Merger	38	*6.7%*
Total	**563**	*100%*

Based on Table 4, it becomes evident that most activists seek board representation and control. In addition, another frequently cited motivation for engaging in activism is not surprisingly maximizing shareholder value. Hedge funds that are attempting to achieve this can employ several tactics. The tactic that most hedge funds apply when seeking for maximalization is a publicly disclosed letter to the board and / or management. The content of the letter differs greatly among hedge funds, but capital allocation and strategy changes appear to be one of the main messages upon which hedge funds urges board members to act. Next, the campaign type "13D Filer – No Publicly Disclosed Activism" comprises a large part of the sample. In this case, hedge funds do not explicitly state their purpose, but the outcome regarding this campaign type was mostly board representation. To conclude, the findings of the sample are consistent with the existing literature, namely that board representation is most popular among hedge funds (Brav et al., 2008).

Finally, Table 5 presents the sector characteristics of the target companies. Activist hedge funds do not have a particular sector focus regarding the selection of target company to acquire. A broad range of sectors is targeted, and electronic technology, health technology and consumer services are the most favorable investment sectors for hedge funds in which to acquire a significant stake.

[6] The dissident group stands for hedge fund

Table 5: Sectors subject to activism

Sector	N	*% of sample*
Commercial Services	51	*9.1%*
Communications	11	*2.0%*
Consumer Durables	18	*3.2%*
Consumer Non-Durables	9	*1.6%*
Consumer Services	69	*12.3%*
Distribution Services	16	*2.8%*
Electronic Technology	99	*17.6%*
Energy Minerals	24	*4.3%*
Health Services	15	*2.7%*
Health Technology	66	*11.7%*
Industrial Services	15	*2.7%*
Non-Energy Minerals	4	*0.7%*
Process Industries	24	*4.3%*
Producer Manufacturing	35	*6.2%*
Retail Trade	39	*6.9%*
Technology Services	60	*10.7%*
Transportation	8	*1.4%*
Total	**563**	***100%***

3.2 Matched sample

In order to more accurately measure the effects of hedge funds activism, a control group is created by following the propensity score matching method. Target companies are matched one on one with a control company based on several characteristics. In this research, companies are matched based on size, industry, and geography one year prior to the hedge funds announcing their activist intentions with target companies. The control group is shielded from the exposure to activism but is very similar to the target group and therefore sheds light upon the true effect of activism. Noteworthy is that the control group experiences a high attrition rate of 70% within four years. All companies in the control group are examined in the same manner as the target companies, the only difference being the size of the sample. For a small fraction of the target companies, the matched control company was not sufficient and was deemed to be not representative for the analysis.

3.3 Stock performance

To become comfortable with the general consensus of the academic literature, an event study is performed to examine the short-term peak in stock prices. The WRDS U.S. daily event study provides a widely used empirical tool to do so. This event study is designed to measure the impact that the activist event has on the stock returns of the target companies. In the data set that was provided to me, the announcement date as well as the date when the 13D was filed were already given. Therefore, after I reduced my data set to a representable sample, the event date was easily identified. Next, the appropriate event window is chosen, which is set on 20 days before the event and 20 days after, aligning with Brav et al. (2008). The reasoning behind an event study is to determine how the market reacts to the announced activism.

When the companies' financials are retrieved from Compustat, they all are assigned a unique Global Company Key ("GVKEY"). For Compustat, those keys are sufficient enough to match every company with a single key number; however, using the WRDS database, each company must be linked to the PERMNO code. WRDS provides a tool that transforms the GVKEY codes into the PERMNO codes to yield the correct company. However, a small fraction of our sample does not have matching codes. Therefore, a few companies are missing for the stock performance analysis. Finally, the GKVEY codes and the event data are filled in the WRDS event study tool, the abnormal returns are calculated in excess of the CRSP Value-weighted market return and the estimation window is set at 100 days with a minimum number of valid returns of 70 observations.

With the event study I can reject or accept the results of previous papers, which investigated short-term stock performance. However, the primary focus of this research is the long-term effect of hedge fund activism. Therefore, the abnormal returns over a longer period of time are evaluated after the event date. For each unique company in the sample, the monthly alpha[7] is retrieved by comparing the return of the company with the expected return. This is done by using the traditional benchmarks; the Capital Asset Pricing Model (CAPM) and the Fama-French three-factor model plus the added momentum factor from Carhart (1997)[8]. Finally, to evaluate if the long-term returns are consistently higher or lower, the monthly alphas are retrieved by performing regressions for every company spanning 36 months prior to the event and the 48 months after.

3.4 Key financial and accounting measures

The common perception that opponents have on hedge fund activism is the short-sighted focus, thus gaining quick profits, but fail to establish long-term value in the target company. To establish such long-term value, I consider the change in operating performance after the activist intervention event. In order to do so, measures for defining operating performance must be clarified. In general, two of the most

[7] The alpha is the rate of return that exceeds the expected return
[8] Hereinafter referred to as "FFC4" or "Fama and French model"

common metrics for operating performance that are widely used in the literature are ROA and Tobin's Q. Return on Assets, which measures the return generated by a company's asset base and is typically used when comparing a company's performance between periods. The higher the return, the more productive and efficient the company is at utilizing its resources. Typically, different industries have different ROAs due to different business models. For instance, industries that are capital-intensive need a high value of fixed assets in order to operate properly, their large asset base will increase the denominator. Therefore, I adjust the performance of the target company for the mean ROA of the industry that they operate in. The industries are grouped using their four-digit Standard Industry Classification (SIC) code. When a group of companies with the same four-digit SIC code contains less than five companies, it is assumed to not be applicable, and the three-digit SIC code is then used, and so on.

The other performance metric is Tobin's Q, which is one of the most important metrics for examining how various corporate governance mechanisms affect firm value, and therefore economic value. Tobin's Q is defined by Bebchuk et al. (2015) as the as the ratio of market value of equity and book value of debt to the book value of equity and book value of debt. It reflects how successful a company is at turning the book value of their assets into the market value attributable to shareholders. Cremers et al. (2016) use the following Compustat items to calculate Tobin's Q: $AT - CEQ + PRCC\_F * CSHO) / AT$. Tobin's Q is one of the dependable variables in this research and I use the same formula that Cremers et al. (2016) applied in his research for the upcoming tests and results. An increase in Tobin's Q indicates that a company succeeded in turning a given book value of assets into market value accrued to investors (Bebchuk et al., 2015). However, Watchell, Lipton, Rosen and Katz (2013) express their criticism in the Harvard Law Review regarding the heavy reliance of Tobin's Q to measure performance of targets that are subject to activism. In addition, Dybvig and Warachka (2015) demonstrate that Tobin's Q is not that quite an accurate measure of performance. They argue that companies that forego profitable investment opportunities, e.g. activists that pressure the board to return capital to investors or defer investments in R&D and Capex, can actually have a higher Tobin's Q. Furthermore, hedge fund managers are driven by their own incentive schemes and the need to return value to their own investors. Therefore, hedge funds may reorient the target company to prioritize shareholder wealth over other internal priorities of the company (DesJardine & Durand, 2019). This implies that managers may be shift their investment decisions to a more short-term horizon to focus on maximizing shareholder value and forego on strategic investments that improve long-term value such as R&D and Capex spending. To yield a complete picture of how activist interventions affect financial company performance, I examine a company's cash position and cash flow. Finally, to address the general consensus that target companies' managers may be forced to focus on short-term performance and thereby forego on long-term strategic investments, I also consider several investment measures. The table below presents the ratios to address financial performance and considers operating measures, cash flow measures, and strategic investments. All measures are adjusted for industry-wide effects. Finally,

aligning with Bebchuk et at. (2015), the financial performance metrics are also analyzed by performing a regression analysis, enabling me to control for the size and the age of a company, yearly fixed effects, industry fixed effects and company fixed effects. For the regression analysis, I create year dummies, that represent the years following the intervention, spanning from t = event year until t + 4 years after intervention. All observations are measured at the end of the fiscal year.

Table 6: All variables for measuring long-term financial performance

The following table presents all the variables used for measuring financial performance, divided into three categories: operating measures, cash flow measures, and strategic investments. Furthermore, the Compustat codes are provided to display how a variable is structured. Finally, the definition is given.

Variable	Compustat	Description
Tobin's Q	(AT - CEQ + PRCC_F * CSHO) / AT	Ratio of the market value of assets to the book value of assets
ROA	EBITDA / AT	Earnings before interest depreciation and amortization
Cash Holdings	CHE / AT	Cash and short-term investments
Cash Flow Operations	OANCF / AT	Cash derived from operating activities
Capex	CAPX / AT	Capital expenditures
Debt	(DLTT + DLC) / SEQ	Long-term plus short-term debt deflated by total book value of equity
R&D	XRD / AT	Research and developments costs
Cash Flow Investments	IVNCF / AT	Cash expenses that are classified as investment activities
Dividend Payout	(DVC + DVP) / NI	Dividend payments to all equity holders

4. Results

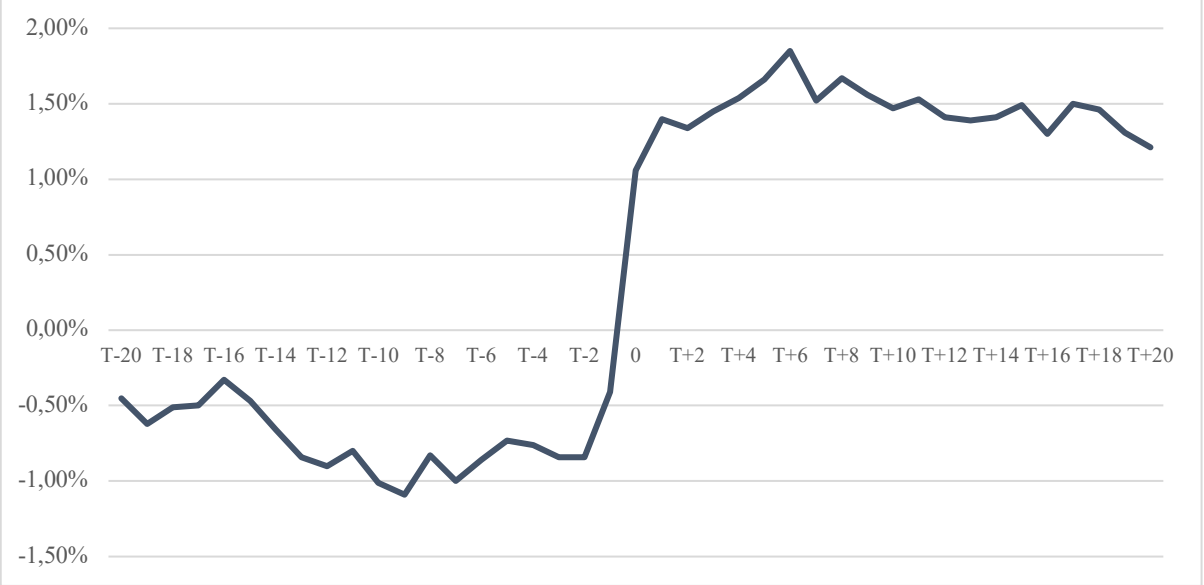
This chapter will provide the core message of this research and is structured as follows. First, I employ event study methodology to measure the short-term effect on stock returns associated with the announcements of hedge fund interference. The long-term stock performance is measured by performing regressions for each individual company to find the alphas indicating the abnormal returns for different time windows. Next, the long-term financial performance of target companies is measured by applying operating performance metrics. Moreover, the financial performance is measured alongside two cash (flow) metrics. Finally, the last part of the financial performance contains several strategic investments that have an impact on the long-term performance and can function as a proxy for myopic activism. At the end, all the metrics are regressed to test for statistical significance. The year dummy's in the regressions represent the years following the intervention. The appendix provides a graphical overview of the course of all metrics throughout the years compared with the control group (table 19).

4.1 Short-term stock performance of target companies

First, to measure the reaction that the market has on the announcement of hedge fund activism, an event study is performed. If investors perceive this event to be beneficial for the target company, an increase is expected in the abnormal return. As previously mentioned, the abnormal return is measured alongside the adjusted market model and the CAR is in excess of the value weighted NYSE/Amex/NASDAQ index. The results are presented below in graph 1.

Graph 1: The Cumulative Abnormal Return around the event date

This graph is the result of the event study and represents the cumulative abnormal returns of the target companies. The "0" represents the event date when the 13D schedule was filed. The stock returns are examined 20 days prior to the announcement and 20 days afterward. Finally, to determine the abnormal returns, the returns are compared to the CRSP value-weighted NYSE/Amex/NASDAQ index.



The graph is plotted for 20 days prior the event and the 20 days afterwards. Between the minimum and maximum value of this event study, the CAR increased by 1.66%. Importantly, it becomes evident that the abnormal return experiences their largest increase only one or two days prior to the event and one or two days afterwards. This increase accounts for 2.14% over four days. To summarize, this result aligns with the general consensus of the literature. The market generally perceives the announcement of hedge fund activism as positive. Moreover, when a 13D schedule is filed, the investor must disclose the information within in 10-days of the transaction, therefore making it perfectly suitable for an event study.

In contrast, the results of this research are less profound than other respected papers. For example, Klein & Zur (2009) extended the time window by 10 days [-30, 30]. Additionally, they used the market adjusted returns to determine the abnormal returns and find an increase of 7.2%. Furthermore, Brav et al. (2008) plots the average buy-and-hold return of their target companies in excess of the same benchmark used within research. The time window is set on [-20, 20] days and the abnormal returns continue to trend, up to a total of 7.2% on day 20.

In the end, the slope, the run-up, market reaction and positive abnormal returns in this research share similarities with well-established papers, but the abnormal returns are less profound. This may be because I selected a more recent time sample. In the end, it is possible that the short-term spike is simply a temporary effect and reflects trading friction rather than positive value prospects for the target. Therefore, stock data for the four years following the intervention are examined in the following section.

4.2 Long-term effect stock performance of target companies

I verified that the hedge fund targets experience an initial spike in their abnormal returns surrounding the event date. However, there is still ongoing debate whether activism has a long-term effect on a company's performance. It is argued that the initial spike is the result of temporary overreaction and is later reversed (Lipton, 2013). Therefore, in this section, the long-term stock performance is examined. In order to analyze these long-term effects of activism, each company in the sample is examined individually. I conduct multiple regressions in Stata to extract the monthly alpha for each company in the sample. The target's return is measured against the appropriate benchmark, CAPM and Fama-French Carhart Four-factor model. These regressions are performed on an individual company level. To obtain the complete picture that activism has on stock performance, three event windows are selected: [-36, -1], [1, 24], [1, 48]. The analysis of the stock performance in the period prior to the event date allows me to reject or verify whether hedge funds generally target underperforming companies; the results are presented in Table 7. For each time period, the mean, median, standard deviation, t-statistic, and the number of observations are given. The t-statistic is measured by dividing the coefficient with its corresponding standard error.

Table 7: Individual company regressions to estimate the alphas

Table 7 displays the results of the regressions that are performed on an individual basis. The monthly alphas are retrieved for multiple holding periods. In panel A, the results of the CAPM alphas are displayed, while in panel B, the Fama-French Carhart Four Factor model is used to retrieve the alphas. For both models, the mean and median of the alphas (in %) are presented as in addition to their corresponding standard error, t-statistic, and total number of observations.

Panel A: CAPM alphas

Holding period	N	Mean (%)	SD	Median (%)	t-statistic
(-36, -1)	352	-0.544	9.059	-0.005	-2.049
(1, 24)	387	0.203	4.745	0.192	0.842
(1, 48)	389	0.140	4.641	0.145	0.596

Panel B: FFC4 alphas

(-36, -1)	350	-0.595	5.139	-0.110	-2.167
(1, 24)	387	0.253	7.383	0.403	0.674
(1, 48)	389	0.176	7.195	0.347	0.483

It is interesting that both asset pricing models reveal a negative mean and median alpha for the period prior to the event [-36, -1]. Furthermore, the results for this time window are statically significant at the 10% level and therefore provide evidence that targets of hedge funds indeed tend to underperform.

The next two rows for both models represent the subsequent periods after the intervention event [1, 24] and [1, 48], ranging from two years after the event until four years. Both models exhibit positive alphas for the periods after the event; unfortunately, the results are not statistically significant. However, according to Fama (1998), the t-statistic should be treated with caution, because the standard error of the mean estimated alphas does not fully account for the unobserved variability in performance. Still, the long-term alphas are positive and thus do not experience a negative reversal in their stock performance. Overall, the target companies did not undergo a negative reversal or experience underperformance in the subsequent years, hence the alphas in both periods after the intervention are positive. This supports the view of the proponents of hedge fund activism.

4.3 Long-term operating performance of target companies

As described in Section 3.4, the operating performance is measured alongside two metrics, the ROA and the Tobin's Q of the target company. The measurements occur at one year prior to the activism event, then during the event year, and finally the year in which the hedge fund disclosed their activist intentions. After the filing, four subsequent years are measured to capture the long-term performance, the results of which are presented in Table 8. The first four columns present the number of observations that are used in the analysis, the raw mean, the median and the standard error of all target companies in the sample. To control for industry-wide effects on performance, the industry-adjusted mean is presented in the last column. Panels A and B are constructed in a similar manner.

Table 8: Raw ROA and Tobin's Q of the target companies

Panel A reports the development of the ROA over a four-year horizon after the activist intervention and one-year prior the intervention. Columns (2), (3), (4) and (5) display the sample size, the mean, the standard error and the median of the ROA for all the target companies in the sample. The final column (6) shows the industry-adjusted mean, which is the value in excess of the all the U.S.- listed companies operating in the same industry. Panel B is similar to Panel A, but now the Tobin's Q is the dependent variable. Both variables are winsorized[9] by adjusting the tails of the distribution with by 2.5%, and all observations of the variables are observed at the end of the fiscal year. In the upcoming tables, all other variables are winsorized with the same cuts as described, unless stated otherwise.

Panel A: ROA

ROA	**N**	**mean**	**SD**	**median**	**adjusted mean**
t - 1	453	0.055	0.166	0.094	0.021
t = event year	417	0.052	0.176	0.092	0.027
t + 1	353	0.052	0.164	0.090	0.016
t + 2	313	0.040	0.204	0.090	0.017
t + 3	284	0.043	0.200	0.091	0.024
t + 4	257	0.055	0.174	0.091	0.034

Panel B: Tobin's Q

Tobin's Q					
t - 1	454	1.656	0.938	1.330	-0.545
t = event year	421	1.697	0.953	1.412	-0.553
t + 1	356	1.778	1.022	1.482	-0.464
t + 2	316	1.889	1.078	1.529	-0.396
t + 3	286	1.949	1.081	1.562	-0.437
t + 4	259	1.856	1.087	1.454	-0.508

[9] Statistics like the mean and standard error are susceptible to outliers, winsorizing is used to mitigate the effect of outliers by changing them in the values of the confidence limit, in this case 95%

An interesting observation of Table 8 is the development of the number of target companies during the sample period. From the 416 unique companies that were acquired by an activist hedge fund, only 257 remained public and have complete data following the activist intervention. This results in an attrition rate of 61%, which aligns with Bebchuk et al. (2015). In their paper, they found an attrition rate of 49%. According to Bebchuk et al. (2015), most disappearances of companies in the Compustat database are due to acquisitions.

The evidence of Table 8 presents mixed results for the two-operating metrics. The average ROA of target companies decreases until three years after the intervention. According to the myopic activist claim operating performance should increase in the early years after intervention and companies should experience a significant drop in operating performance later on which is below the intervention year (Bebchuk et al., 2015). The raw mean follows an opposite pattern, in the end (t + 4), the average level of ROA is higher than the intervention year, which contradicts the myopic activist claim.

On the other hand, panel B presents a consistent upward trend of the average Tobin's Q value of target companies until three years after the intervention, after which a small drop occurs. However, it is evident that all years (t + 1, t + 2, t + 3, and t + 4) exceed the event year and the year prior to intervention. The relatively stable increase in the average Tobin's Q indicates that the operating performance is improving. Finally, when using ROA as a proxy for operating performance, target companies tend to perform worse in the short-term, but at the end of the period, experience a sharp increase leading to a level that outperforms the intervention year.

Merely focusing on the raw mean of target companies is not enough to derive a complete picture of the effects of activism. To measure the true effect of hedge fund activism, the raw mean is adjusted by subtracting the mean of the industry as a whole. This entails that every (performance) metric of all the target companies in the sample is adjusted for industry-wide effects. This is necessary because changes in the performance metrics might be caused by changes in the industry as a whole, or due to macro-economic effects and not due to the influence of hedge funds. In this research, the adjusted mean ROA and Tobin's Q of a target company are computed by subtracting the mean of all companies operating in the same industry in the same year, from the raw mean of the specific target company. Industries are grouped based on their respective four-digit SIC code. When a SIC group does not have sufficient peers (i.e. fewer than five), then the three-digit SIC code is used as an industry average.

The industry-adjusted mean is presented in the last column of Table 8. It is interesting that in terms of ROA the results do not indicate underperformance of the target companies. The industry-adjusted mean for the ROA is positive and thereby indicates relative overperformance compared with their industry peers. The average ROA increases over time and is higher in each of the subsequent years following the intervention. Therefore, the operating performance demonstrates improved performance relative to the industry peers.

On the other hand, Tobin's Q reveals that target companies tend to underperform with respect to their industry peers, a finding consistent with the academic literature. The pattern of the adjusted

mean for Tobin's Q reveals that the target companies experience their lowest level of performance at the time of intervention. The adjusted mean increases until (t + 2) but decreases at (t + 3) and (t + 4). However, the industry-adjusted Tobin's Q is higher in each of the four subsequent years after intervention, indicating that the operating performance of target companies experiences a steeper increase than their industry peers.

Table 9: Raw ROA and Tobin's Q of the control group

	ROA		Tobin's Q	
Year	**N**	**mean**	**N**	**mean**
t - 1	420	0.052	424	1.904
t = event year	400	0.060	404	2.085
t + 1	374	0.047	376	2.174
t + 2	330	0.045	331	2.218
t + 3	307	0.040	308	2.336
t + 4	288	0.048	289	2.233

Finally, in Table 9, the target companies are matched with comparable companies based on size, industry, and geography. The matched companies did not experience pressure from hedge fund activists. For both metrics, the control group outperforms the companies that were targeted. Furthermore, both metrics display a similar slope in levels of performance. This can indicate that the performance was subject to macroeconomic effects.

In summary, ROA and Tobin's Q are two metrics that are widely applied in the literature for serving as a proxy for the operating performance of a company. I examined both metrics by considering the raw data and the industry-adjusted data, after which I carefully selected a matched control group. It is evident that hedge funds target companies that are underperforming with respect to their industry peers and matched peers. Moreover, I could argue that hedge fund activism does not necessarily have a negative effect on performance. The ROA increases slightly, and Tobin's Q increases during the time horizon. To prove statistical significance and control for several variables, I perform a regression analysis in Section 4.6.

4.4 Long-term cash flow performance of target companies

Panel A in Table 10 presents the cash holdings of the target companies, measured as cash and cash equivalents plus short-term liquid investments deflated by total assets. One of the effects of hedge fund activism that is often stated is that they would address the free cash flow problem described by Jensen (1986). According to Jensen's theory, hedge funds reduce the agency conflict between managers and shareholders by reducing the amount of cash available, by obligating managers to make continuous payments in the form of dividends or interest payments. More specifically, according to opponents of

hedge fund activism, this destroys value in the long-term and increases value for shareholders in the short-term.

In addition to Bebchuk et al. (2015), performance is measured by estimating the cash flows earned through the target companies' operations (CFO). CFO depicts how much cash a company generates from its core business as opposed to the cash it generates through investment or borrowing activities. Therefore, it is an important benchmark for determining the financial success of a company, increasing CFO will ultimately benefit shareholders. Aligning with DesJardine & Durand (2019), cash flow from operations is used to identify whether there is a trade-off between short-term gains, reflected in an increase in market value and a decrease in the operating cash flow. The results are presented in Panel B of Table 10.

The raw results of the cash holdings slightly decrease overtime during the four-year period following intervention. However, the most significant drop in cash holdings is experienced in (t + 4); before (t + 4), there is no significant variance in cash holdings post-intervention, as the raw cash level remains relatively stable. This indicates that hedge fund activism does not significantly impact the cash holdings, hence cash holdings are kept relatively stable in the short to mid-term. When target companies are compared with their industry peers, the results indicate that, for most of the time during the post-intervention period, target companies maintain higher cash levels than their industry peers. In the year prior to intervention, the results reveal that target companies, on average, have lower levels of cash holdings one year prior to the intervention year compared with their industry peers, contrasting with the findings of Klein and Zur (2009).

DesJardine & Durand (2019) argue that the short-term increase in market value and profitability is associated with a long-term decrease in, among other things, operating cash flow. They are opponents of hedge fund activism and find that almost immediately after activist intervention operating cash flow steadily and increasingly decreases; however, the results presented in panel B paint a different picture. CFO decreases during the first two years after intervention and increases during the two years after that. Moreover, what both results have in common is that the long-term operating cash flow (indicated by t + 3 and t + 4) is lower than operating cash flow levels that target companies experience prior to intervention and the year of intervention. According to DesJardine & Durand (2019), this decrease can be attributable to a cutback in long-term investments. The industry-adjusted mean follows a pattern similar to that of raw mean and is positive, indicating that hedge funds tend to target healthy companies with steady operating cash flows. This aligns with Brav et al. (2008).

Panel C displays the cash holdings and operating cash flow of the control group. Compared with the target group, on average, the control group has less cash holdings in the year prior to the event and all the years afterward. This serves as evidence that hedge funds target more cash-rich companies and aligns with Jensen's (1986) theory. Cash flows generated from the operations are increasing for the control group, whereas the target group in the first instance suffer from declining cash flows, which could indicate that target companies invest more in Capex and working capital than their matched peers.

Table 10: Cash measures

Panel A reveals the cash holdings of target companies one year prior to the activist intervention and then presents the development over a four-year horizon. Panel B presents the cash flow that are generated by the core business of a target company. The measures are constructed as described in Section 3.4. For both measures, the adjusted mean is given, which is the value in excess of the industry average of all companies operating in the same four-digit SIC code. Panel C provides the mean of both metrics and their corresponding number observations of the matched control group

Panel A: Cash and cash equivalents plus short-term liquid investments deflated by total assets

Cash	**N**	**mean**	**SD**	**median**	**adjusted mean**
t - 1	452	0.230	0.223	0.145	-0.003
t = event year	416	0.233	0.227	0.150	0.003
t + 1	356	0.226	0.233	0.140	0.001
t + 2	316	0.228	0.234	0.147	0.010
t + 3	285	0.228	0.228	0.147	0.006
t + 4	257	0.210	0.222	0.134	-0.006

Panel B: Cash flow generated from operating activities deflated by total assets

CFO					
t - 1	453	0.040	0.144	0.072	0.010
t = event year	418	0.041	0.140	0.070	0.013
t + 1	353	0.030	0.149	0.064	0.010
t + 2	312	0.024	0.162	0.067	0.002
t + 3	284	0.026	0.160	0.069	0.002
t + 4	257	0.034	0.155	0.066	0.018

Panel C: Raw cash and CFO of the control group

	Cash		**CFO**	
Year	**N**	**mean**	**N**	**mean**
t - 1	419	0.225	423	0.049
t = event year	399	0.212	403	0.039
t + 1	372	0.213	375	0.041
t + 2	329	0.213	330	0.042
t + 3	304	0.219	308	0.043
t + 4	285	0.216	289	0.048

4.5 Strategic investments of target companies

Hedge fund activists are generally accused of extensively cutting into strategic investments, which can serve as a proxy of myopic behavior. Hedge fund activists can pressure management to allocate capital to them in the form of share buybacks or dividend payouts, thereby reducing the amount available for long-term investments. This is a fundamental shift in the way a company deploys its capital. According to the myopic activists claim, those losses are not reflected in the short-term stock price or operating performance; rather, shareholders encounter those losses in the long-term. Thus, the main question is how those strategic investments develop after the announcement of activist interference, in particular in the long-term (t + 3) and (t + 4). Following Klein & Zur (2009), I also account for the amount of capital that is invested in the company to achieve organic growth.

Table 11: Strategic investments

Panel A reports the cash flow generated by investing activities; more specifically, this metric includes the sale of property, investments, and other investing activities minus Capex, acquisitions, and other investments. Meanwhile, panel B reports the capital expenditures of the target company deflated by the total assets, and panel C reports research and development expenses deflated by total assets. For all metrics, the industry-adjusted mean is given.

Panel A: Cash flow from investing activities

CFI	N	mean	SD	median	adjusted mean
t - 1	453	-0.049	0.136	-0.050	0.009
t = event year	417	-0.050	0.135	-0.042	0.015
t + 1	353	-0.045	0.134	-0.040	0.026
t + 2	312	-0.039	0.132	-0.040	0.022
t + 3	284	-0.054	0.142	-0.039	0.015
t + 4	257	-0.063	0.141	-0.041	0.004

Panel B: Capital expenditures

Capex					
t - 1	458	0.047	0.049	0.030	0.005
t = event year	422	0.047	0.050	0.030	0.003
t + 1	358	0.046	0.050	0.030	0.000
t + 2	317	0.046	0.050	0.029	0.002
t + 3	286	0.046	0.049	0.031	0.002
t + 4	260	0.045	0.048	0.030	0.001

Panel C: Research and Development expenses

R&D					
t - 1	254	0.119	0.128	0.078	0.003
t = event year	236	0.117	0.126	0.080	0.005
t + 1	190	0.114	0.126	0.069	-0.002
t + 2	165	0.114	0.128	0.067	0.001
t + 3	147	0.113	0.138	0.063	0.000
t + 4	131	0.105	0.130	0.056	-0.007

Cash flow from investment activities represents a company's purchases and sales of assets and includes items such as divestitures, purchase of fixed assets, and loan collections; these items are considered long-term investments. Panel A reports the results for CFI, where negative numbers indicate that a company invests more than they earn from the sales of assets. Panel A displays that the long-term values (t + 3 and t + 4) of the raw mean are more negative than the value in the event year, indicating that activist companies tend to invest even more in the long-term. According to DesJardine & Durand (2019), negative values reflect a growth intention, since cash is being spent on investments that are expected to pay-off in the future. The results in Panel A, therefore, contrast with the general predictions of the myopic activist claim. However, the industry-adjusted mean is positive, which indicates that the target companies invest less capital than their industry peers, but the adjusted mean has a decreasing slope.

Capital expenditures remains relatively stable throughout the years, indicating that there is minor cutback. The industry-adjusted mean is positive, which indicates that target companies spend, on average, more on capex than their industry peers, but decreases as well. Panel C displays the raw mean as well as the industry adjusted mean for R&D and presents a slightly decreasing trend, these findings are in favor of the opponents of hedge fund activism and indicate a cut back in R&D expenses.

Table 12 displays the raw strategic investment measures of the control group, which consistently allocates more funds to all strategic investments. On the other hand, all measures experience a reduction in funds made available to them throughout the years. Which is similar to the target companies.

Table 12: Raw CFI, Capex and R&D of the control group

	CFI		**Capex**		**R&D**	
Year	**N**	**mean**	**N**	**mean**	**N**	**mean**
t - 1	415	-0,086	421	0,055	247	0,131
t = event year	400	-0,082	405	0,056	231	0,133
t + 1	368	-0,083	377	0,054	212	0,132
t + 2	326	-0,082	332	0,053	188	0,131
t + 3	303	-0,073	309	0,049	174	0,127
t + 4	285	-0,072	290	0,048	165	0,117

To examine whether there exists a fundamental shift in capital allocation, the results for dividend payout ratio and debt development are presented in Table 13. Debt levels are lower prior to intervention and increases by approximately 5% during the post-intervention period. This is a steeper increase than the average level of debt of their industry peers. Furthermore, the industry-adjusted mean is positive, indicating that target companies are more levered than their industry peers post-intervention.

Dividend is measured as the percentage of net income that is paid out to equity holders. According to the myopic activists claim, this metric should experience a significant increase. Panel A of Table 13 reveals that the dividend payout ratio increases by almost 3 percentage points in (t + 1) and (t + 2), but in the long-term, this value experiences a sharp decrease and reaches a level that is below the intervention year and the year prior to intervention.

Table 13: Dividend payout ratio and debt levels target companies

Panel A reports the dividend payout ratio measured as the percentage paid-out to shareholders. Panel B reports the total (short-term plus long-term) debt level of the target company deflated by the total shareholders equity. For both metrics, the industry-adjusted mean is given.

Panel A: Dividend payout ratio measured as total dividend deflated by net income

dividend	**N**	**mean**	**SD**	**median**	**adjusted mean**
t - 1	132	0.285	0.414	0.212	-0.098
t = event year	130	0.257	0.514	0.142	-0.133
t + 1	120	0.274	0.453	0.200	-0.030
t + 2	110	0.283	0.440	0.229	-0.037
t + 3	111	0.221	0.432	0.185	-0.159
t + 4	106	0.238	0.433	0.210	-0.032

Panel B: Debt level

debt					
t - 1	338	0.268	0.222	0.218	-0.028
t = event year	311	0.295	0.236	0.249	-0.009
t + 1	266	0.321	0.238	0.275	0.005
t + 2	246	0.342	0.246	0.306	0.014
t + 3	227	0.345	0.243	0.297	0.008
t + 4	213	0.362	0.247	0.298	0.019

Table 14 presents the results for the control group. Regarding the debt levels, target companies tend to be more levered than their matched control group post-intervention. Although debt levels increase for both groups, target companies experience a steeper increase in their debt levels. According to Imbierowicz & Wahrenburg (2013), this implies positive effects for stockholders due to transfers of wealth at the expense of bondholders. Brav et al. (2008) find that the dividend yield tends to be lower for non-target peers, which is indeed the case for the intervention year. Surprisingly, the dividend payout

ratio follows the same slope as the target group, indicating that both groups significantly increase their dividend payments two years after the event year. Hedge funds appear to address the agency problems at the target companies by reducing excess cash by paying dividends and increasing interest payments associated with a higher debt level, but this appears to be the same policy that management of the companies in the control group implements.

Table 14: Raw dividend and debt of the control group

	Dividend		Debt	
Year	**N**	**mean**	**N**	**mean**
t - 1	125	0.287	308	0.284
t = event year	133	0.191	294	0.282
t + 1	123	0.243	261	0.299
t + 2	107	0.248	247	0.318
t + 3	108	0.148	227	0.324
t + 4	99	0.266	214	0.325

Concluding remarks

In sum, no evidence suggests that the long-term performance of target companies declines post-intervention. On the contrary, Tobin's Q consistently increases during the four-year period and ROA experiences a steeper increase than their industry peers. In addition to Bebchuk et al. (2015), another important performance measure is added, namely CFO. The CFO ratio follows a downward trend, when compared with their industry peers, although the slope of the target companies declines less. Moreover, the adjusted mean for target companies is positive, indicating that target companies are more profitable than their industry peers. However, based on CFO, target companies are performing worse compared with the intervention year.

Finally, the myopic activists claim insinuates that hedge fund targets reduce cash that is available for long-term investments in order to pay out dividend or buy back shares. The results of these long-term investments reveal a reduction in R&D, no significant difference in Capex throughout the years and an even more negative value for CFI.[10] Altogether, this mixed view provides limited support for opponents of the myopic activists claim and show that the averages for the operating metrics experience an increase post-intervention. To further deepen the understanding of the relationship between hedge fund activism and the financial long-term performance of target companies, the following section tests for statistical significance by performing several regressions.

[10] Decreasing CFI means less cash at hand and thereby indicates that cash is being spent on investments, such as acquisitions of business or the purchase of assets

4.6 Regression analysis

In order to assess if there is a statistical significance for both operating ratios and hedge fund activism, an Ordinary Least Squares (OLS) regression is conducted. Table 15 combines four different OLS regressions, in which each column represents one regression, similar to the paper by Bebchuk et al. (2015). The OLS regression is a statistical method to analyze the relations between a dependent variable and several independent variables. In this research, columns (1) and (2) presents the dependent variable ROA and columns (3) and (4) presents Tobin's Q. Both their coefficient estimates are given as well as their p-value are provided. One benefit of a regression is that it allows controlling for certain variables that could have an impact on the operating performance. For instance, in all four regressions I control for the size and age of a company, represented by "Ln_Assets" and Ln_Age". Size is a common control variable and Agarwal & Gort (2002) argue that age is related to company's performance, as well. In all four regressions and the regressions afterwards, I cluster the standard errors at company level unless stated otherwise. Finally, in all regressions, pre event dummies are included, which account for the performance up to three years prior until the activist event.

For columns (1) and (3) industry fixed effects are included, in which the industries are based on the four-digit SIC codes. As a result, the coefficient of the year variables should be considered as a "difference-in-difference". This means that for each company, the ROA and Tobin's Q for every year is measured against the average value of all companies that are operating in the same four-digit SIC code and year in the sample.

Next, in columns (2) and (4) firm fixed, effects are included. In this case, the coefficients should be interpreted as the excess performance of a target company during all the years from "t = event year" till "t + 5" over its own average performance. Finally, all regressions include year fixed control variables to account for time trends and different market conditions and all regressions are constructed in the same manner. This aligns with methodology used by Bebchuk et al. (2015).

The results in Table 15 reveal that in all four regressions, the event year has a negative coefficient, in which three of the four coefficients are significant. It is evident that the results are consistent with the general view that hedge funds target companies that are underperforming at the time of intervention. The focus of this research is on the relationship between hedge funds activism and long-term company value and whether evidence exists for the myopic activist claim. Regarding ROA, the coefficient for all year dummies reveals a persistent increase during the four-year horizon. Moreover, the last year has the highest coefficient compared with the event year. This is evidence that operational performance, measured by ROA improves after the activist intervention. However, it is evident that all of the coefficients are not statistically significant.

Columns (3) and (4) display the results regarding Tobin's Q. The coefficients of the year dummies reveal a consistent upward trend until (t + 4), but in the end, the coefficient is still higher than the intervention year. Furthermore, 7 of the 10 coefficients are significant; therefore, the results in table

15 reveals that the operating performance tends to improve after activist intervention and that there is no decline. These findings contradict the general notice of those making the myopic activists claim.

Table 15: Regression analysis of ROA and Tobin's Q

Table 15 reports the results of the OLS regression, in which the dependent variables are ROA (columns 1 and 2) and Tobin's Q (columns 3 and 4). The results that the OLS regression produces are the coefficient and the t-statistic, which are displayed alongside the independent year dummy variables. These independent dummy variables (t + i), (i = 0, 1, 2, 3, 4) are equal to one if a firm is targeted by an activist hedge fund *i* years going forward. The following control variables are implemented: "Ln_Assets" which is the logarithm of the firm's assets, to control for size, "Ln_Age" is the logarithm of the year when a company signed for an IPO and made its first appearance in the sample period, pre event dummies for every regression, industry fixed effects are only used in columns (1) and (3), and firm fixed effects are only used in column (2) and (4). Finally, the sample contains all firm year observations from Compustat from 2009 to 2018.

Regression	(1)	(2)	(3)	(4)
dependent variable	**ROA**	**ROA**	**Tobin's Q**	**Tobin's Q**
t = 0 (event year)	-0.00462	-0.0107*	-0.342***	-0.0830**
	(0.00919)	(0.00607)	(0.0699)	(0.0418)
t + 1	-0.00318	-0.00806	-0.248***	0.00945
	(0.00922)	(0.00551)	(0.0748)	(0.0544)
t + 2	0.00134	0.00178	-0.172**	0.0837*
	(0.0108)	(0.00749)	(0.0782)	(0.0429)
t + 3	0.00185	0.00138	-0.192**	0.0562
	(0.0127)	(0.00882)	(0.0843)	(0.0508)
t + 4	0.00586	0.00423	-0.293***	-0.0432
	(0.0109)	(0.00685)	(0.0856)	(0.0532)
ln_Assets	0.0398***	0.0424***	-0.0835***	-0.371***
	(0.00156)	(0.00455)	(0.0136)	(0.0358)
Ln_Age	0.0202***	-0.0206***	-0.0717***	-0.189***
	(0.00283)	(0.00555)	(0.0226)	(0.0474)
Year FE	Y	Y	Y	Y
Firm FE	-	Y	-	Y
Industry FE	Y	-	Y	-
Pre event dummies	Y	Y	Y	Y
Observations	22,449	22,449	24,941	24,941
R-squared	0.391	0.808	0.250	0.796

*** p<0.01, ** p<0.05, * p<0.1 indicate significance levels of 1, 5 and 10%

Cash and cash flow from operations

In Table 18 in the appendix, the multivariate regression is presented for operating cash flow and cash holdings. The coefficients of both cash holding regressions (columns 3 and 4) are positive in the event year, indicating that the targets, on average, have a higher ratio of cash holdings compared with the average of the industry. This provides additional evidence that hedge fund target companies that are cash rich. On the other hand, it is claimed by proponents of the myopic investor claim, that hedge funds drown cash away from the company for the benefit of the shareholders. If the slope of the coefficients serves as a proxy for this behavior, then I must assent with the myopic claim. The year dummy coefficients follow a downward slope, but all of them are not significant. Therefore, it is difficult to deduce a concrete conclusion.

In addition to Bebchuk et al. (2015), I have included another important metric, which serves as an indicator for operating performance; the cash flow generated from the business' core operations. DesJardine & Durand (2019) found a reversal in the financial performance of hedge fund targets. According to DesJardine & Durand (2019) cash flow decreases immediately and for at least five subsequent years. This research, on the other hand, finds a contradictory result. For both regressions in columns (1) and (2) the coefficients are consistently trending up. Moreover, the results in both the event year and in (t + 4) are significant. To summarize, the operating metrics reveal signs that hedge funds have a positive impact on the performance of target companies. In addition, the positive impact is not short-lived; in the long term, no reversal of the operating performance is found.

Strategic investments

Activist hedge funds are often accused of myopic behavior, in which short-lived gains come at the expense of the long-term value. Therefore, more attention must be drawn to the immediate effect of activism on strategic investments in R&D, Capex, and CFI. Generally, the value of these investments is expected to pay-off in the long-term and therefore a considerable amount of capital must be allocated to those investments. In the end, this can pressure the operating result of a company in the short-term. Table 16 presents the results of the regression analysis. The regression is constructed in a similar manner as in Table 15, in which only the dependable variables differ.

Proponents of the myopic investor claim argue, that hedge funds are pressuring managers to take actions that will bring benefits in the immediate future, which may prove eventually detrimental to the welfare of the company. Regarding R&D spending in columns (3) and (4), Table 16 provides evidence that in the subsequent years after the hedge funds intervention, the company cuts back on R&D spending. The coefficients of both regressions are trending downwards, which aligns with the univariate analysis presented earlier in this research (Table 10). Moreover, three coefficients are statistically significant, which indicate myopic behavior.

During the event year, target companies spent, on average, more on Capex, indicated by the positive coefficient. It is interesting that the coefficient becomes even more positive throughout the years. Therefore, after hedge fund interventions, management did not reduce Capex, which contradicts proponents of the short-sightedness of hedge funds. However, almost all coefficients are not statistically significant.

Finally, the cash flows that are generated by a company's investments are measured. When a company spends more on these investments, it is expected to pay-off in the long-term. In this case, a negative value reflects a company's growth intentions. During the event year target companies tends to invest less in assets (or divest more assets), but in the following years the coefficient decreases in both regressions. This contradicts the criticism that activism cuts expenses that generally pay-off in the long-term.

Table 16: Regression analysis of Capex, R&D and Tobin's Q

Regression	(1)	(2)	(3)	(4)	(5)	(6)
dependent variable	**Capex**	**Capex**	**R&D**	**R&D**	**CFI**	**CFI**
t = 0 (event year)	0.00252	-0.00201	-0.00273	0.0103**	0.0172**	0.0131**
	(0.00259)	(0.00161)	(0.0100)	(0.00497)	(0.00681)	(0.00626)
t + 1	0.000617	-0.00396**	-0.0110	-0.000770	0.0222***	0.0134*
	(0.00272)	(0.00184)	(0.0139)	(0.00763)	(0.00827)	(0.00766)
t + 2	0.00492	0.00165	-0.0160	-0.0141	0.0184**	0.00488
	(0.00333)	(0.00257)	(0.0164)	(0.00997)	(0.00919)	(0.00860)
t + 3	0.00500	0.00224	-0.0115	0.00330	0.00987	-0.00642
	(0.00329)	(0.00253)	(0.0191)	(0.0113)	(0.00887)	(0.00778)
t + 4	0.00327	0.000480	-0.0362**	-0.0163**	-0.00184	-0.0184*
	(0.00337)	(0.00266)	(0.0145)	(0.00699)	(0.0101)	(0.0102)
ln_Assets	0.00158***	0.00203**	-0.0508***	-0.116***	-0.00815***	-0.0311***
	(0.000303)	(0.000950)	(0.00288)	(0.00765)	(0.000538)	(0.00280)
Ln_Age	-0.00400***	-0.00490***	-0.00310	0.0258***	0.0212***	0.0490***
	(0.000625)	(0.00160)	(0.00405)	(0.00871)	(0.00140)	(0.00520)
Year FE	Y	Y	Y	Y	Y	Y
Firm FE	-	Y	-	Y	-	Y
Industry FE	Y	-	Y	-	Y	-
Pre event dummies	Y	Y	Y	Y	Y	Y
Observations	24,941	24,941	12,583	12,583	23,499	23,499
R-squared	0.418	0.745	0.404	0.809	0.090	0.335

*** p<0.01, ** p<0.05, * p<0.1 indicate significance levels of 1, 5 and 10%

Dividend and debt level

Another ratio that can serve as a proxy for myopic behavior is the dividend payout ratio. Both Klein & Zur (2009) and Brav et al. (2008) already find that the dividend payout for target companies tends to be lower than their industry peers prior to the event year. Table 17 provides a regression analysis for the event year and all the subsequent years.

Finally, the last proxy for myopic behavior is the debt level of the company. Opponents of hedge fund activism argue that, although operating performance and abnormal stock returns may be positive, these performances are not sustainable for long-term improvements by endangering their solvency and are the result of financial engineering (Strine, 2010).

Table 17: Regression analysis of debt and dividend

Regression	(1)	(2)	(3)	(4)
dependent variable	**Debt**	**Debt**	**Dividend**	**Dividend**
t = 0 (event year)	-0.0448**	-0.00794	-0.269*	-0.235*
	(0.0192)	(0.0105)	(0.140)	(0.126)
t + 1	-0.0140	-0.00112	-0.109	-0.0260
	(0.0227)	(0.0120)	(0.148)	(0.124)
t + 2	-0.00396	-0.00458	0.0152	0.0981
	(0.0274)	(0.0156)	(0.157)	(0.129)
t + 3	-0.0202	-0.00948	-0.201*	-0.105
	(0.0281)	(0.0183)	(0.108)	(0.0866)
t + 4	-0.0115	-0.0165	-0.0651	0.0381
	(0.0299)	(0.0226)	(0.145)	(0.129)
ln_Assets	-0.0513***	-0.122***	0.0441***	0.0270
	(0.00553)	(0.0137)	(0.00935)	(0.0480)
Ln_Age	0.0372***	0.0632***	-0.0798***	-0.0806
	(0.00664)	(0.0124)	(0.0291)	(0.108)
Year FE	Y	Y	Y	Y
Firm FE	-	Y	-	Y
Industry FE	Y	-	Y	-
Pre event dummies	Y	Y	Y	Y
Observations	19,307	19,307	8,157	8,157
R-squared	0.176	0.776	0.078	0.366

*** p<0.01, ** p<0.05, * p<0.1 indicate significance levels of 1, 5 and 10%

Regarding debt levels, all the coefficients for the year dummies are all negative. Although they display an upward trend, target companies in the long-term (t+3) and (t+4) still have lower debt levels than their peers; the results for the dividend payout ratio are quite similar. In columns (3) and (4) it is interesting that both regressions present a positive coefficient for year dummy (t + 2). This suggests an increase in the payout ratio after the intervention and decreases again in the subsequent years, which was also the result in the univariate regression earlier in this research. Therefore, the results imply that the dividend payout ratio follows a specific pattern.

5. Conclusion

In this research, I examine the short- and long-term effects of hedge fund activism, with an emphasis on the long-term. Moreover, the objective of this research is to determine whether evidence exists that hedge funds are subject to myopic behavior. The effect that hedge funds have on the long-term performance of a company is part of an ongoing debate. The existing literature is inconclusive, but the volume of activist interventions continues to increase. In this research, an extensive set of performance measures are implemented to derive a complete view regarding the effects that hedge funds have on target companies. I attempt to assess this ongoing debate by examining the performance and myopic behavior through different angles, i) the stock performance, ii) operating performance, iii) cash (flow) performance and, iv) strategic investments that serve as a proxy for myopic behavior. Finally, in order to truly gauge the effects of activism, all target companies are matched with a control company that did not experience activist influence.

The empirical results reveal sufficient evidence that target companies experience an initial spike surrounding the disclosure of activist intentions. Although my results were not as profound as those of other papers (e.g. Brav et al., 2008; Klein & Zur, 2009; Boyson & Mooradian, 2010), I still find abnormal positive returns for the entire sample in the given time window. This serves as evidence that the market perceives the activist intervention as positive. Moreover, this provides evidence for the second hypothesis. The short-term stock performance effect that activist hedge funds have on target companies is generally accepted and agreed upon in the literature.

On the other hand, the long-term stock performance remains a topic of debate, in which opponents believe in the reversal of the initial spike in the stock performance. This long-term effect is analyzed by conducting regressions on an individual company basis. The appropriate benchmarks are used, CAPM and Fama-French four-factor model, in order to derive the monthly alphas. For both models, I find that target companies significantly underperform prior to the intervention. Several opponents of hedge fund activism (e.g. Lipton, 2013) have accused them of short-termism. Therefore, I extended the time window by examining the performance two years and four years after the intervention. The results indeed provide a reversal of performance but in a positive way. For both models, I find positive alphas in the subsequent years after the intervention. Unfortunately, the results were not significant and thus I cannot fully accept the third hypothesis. However, I do find evidence to partly accept the first hypothesis.

Next, the long-term operating performance is measured alongside two widely accepted metrics; ROA and Tobin's Q. Both metrics are evaluated by performing a univariate analysis, where I examine the raw mean, industry adjusted mean, and compare the mean with a control group that has similar characteristics but did not undergo an activist event. Regarding the raw mean, Tobin's Q increases during the given time period and has a higher value in each subsequent year when compared with the year of intervention. Furthermore, the industry-adjusted mean is negative in the year prior to and in the intervention year, which serves as evidence that hedge funds indeed target underperforming companies.

The ratio of ROA decreases in the years after the intervention and the industry-adjusted mean is positive. However, in the end (t + 4), ROA is higher than the event year and also higher when compared with the control group. Next, several regressions are performed that allows me to control for variables that are relevant and fixed effects. The regressions are constructed in the same way as Bebchuk et al. (2015). These results show an increase in performance following the years after intervention. This supports my fourth hypothesis and I can now fully accept the first hypothesis.

In addition to Bebchuk et al. (2015), I included another performance indicator, namely the cash flow generated from the core business. A successful company is one that generates sufficient cash flows. DesJardine & Durand (2019) find a consistently decreasing value for CFO. As this is true in the first two years in my research, years three and four after intervention experience an increase in value. However, all results did not exceed the event year value. Furthermore, the cash holdings are measured, which decrease in the years following the intervention, but have higher values than the control group. This result fit seamlessly with the view that targets have more and sufficient cash flows.

Finally, to truly investigate whether activist hedge funds are subject to myopic behavior, I analyze an extensive set of strategic investments, that could serve as a proxy for myopic behavior. The following ratios are analyzed; Capex, R&D spending, Cash flow from investing, Dividend payout ratio and the debt level of target companies. The myopic proxies yielded mixed results. One of the claims of the opponents of activism is that improvements in operating performance are achieved through financial engineering, such as dividend payments to shareholders and increased leverage. This research indeed finds evidence that supports that claim. The univariate analysis demonstrates an increase in dividend payments in (t + 1) and (t + 2) and a long-term upward trending value of debt levels. However, these increases are also observed with the control group, although not as profound. This indicates that companies that did not experience an intervention from an activist hedge fund, implement the same policy with regard to debt and dividend payments. The regression presents similar results with increasing coefficients for the year dummies; however, not all the coefficients are significant, hence I can only partly accept the fifth hypothesis.

Finally, effective capital allocation is critical for the future cash generation and growth of the company. Capex, R&D, and CFI are three ways in which this can be achieved. According to the opponents of hedge fund activism (e.g., DesJardine & Durand, 2019), such measures should see a decline in the amount of capital allocated to them. This is indeed the case for R&D spending, which steadily decreases over the period. Moreover, both the regressions exhibit a downward trend as well, with some significant results. Therefore, I can conclude that hedge fund targets indeed cut back on their R&D spending.

Capex remains relatively stable (slightly decreasing) throughout the years and target companies deploy more capital to capex than the industry average. Regarding CFI, the value becomes more negative, indicating that a company invests more in fixed assets than they sale. For the control group, this pattern is reversed. The regression results are partly significant for the CFI coefficients, and

unfortunately no significance is observed with Capex. However, all four regressions (table 16) exhibit an upward trend in the coefficients. This indicates that more capital is deployed through Capex and CFI in the years following the intervention than in the intervention year. Therefore, I cannot fully accept the sixth hypothesis.

Concluding: the aggregate results of an extensive set of ratios and metrics provides a more concrete view on the effect that hedge funds have on the short and long-term performance of a company. Overall, although not all results are significant, the operating performance tends to increase in the subsequent years following the intervention as well as the stock performance. Furthermore, there is some evidence that supports the allegation that hedge funds engage in myopic behavior. However, the general notion that hedge funds destruct long-term value by focusing on short-term gains, cannot be supported by this research.

6. Limitations

Throughout this research, several limitations were stumbled upon. This section will cover these limitations. First and foremost, relating to the reliability of the database. There is no clear, general database where all hedge fund targets are listed. This leads to several studies with slightly different numbers of companies per year, that are investigated on their performance (Allaire, 2017). Hence, it might be possible that cases, which can be defined as an activist event, are not in the database used for this research. This is however the case for all researches in the field of shareholder activism.

Another limitation concerns the control group. Using a matched sample will improve the identification of causality. However, the credibility of empirical analysis is as good as the definition of a control group, who did not receive the 'treatment', i.e. the hedge fund intervention. In this research, propensity scores are used to identify a control group. However, this technique has its limitations as well and may lead to biased results. The matching heavily depends on the variables that are used, in this case, industry and size. But the question remains as to whether other factors that did not make it into the database may have affected the outcome. If any essential variable is missing, then the groups may remain unbalanced which leads to biased results.

7. Recommendations for future research

In this section I will provide a set of recommendations for further research on the effect that activist hedge fund has on their target companies. Given the fact that hedge funds differ from other types of institutional investors, it might be of interest to compare the performance of companies targeted by different types of investors who seek to influence companies. In this research, the performance of target companies is compared with a control group that is similar in terms of size, industry, and geography. Add another set of companies that are targeted by other activists and this will result in an even more complete view on the effect that activist hedge funds have on companies.

Second, Cremers et al. (2016) incorporate several other matching techniques as well to compare companies that experience a hedge fund intervention and those who have not been targeted by hedge funds. In order to gain more certainty on the conclusion and add robustness, more matching techniques should be incorporated. This will enhance the overall result regarding the causality.

Lastly, what is very interesting and a relatively new trend that is emerging; responsible investors incorporate environmental, social and governance (ESG) aspects into their investment process. Institutional investors and asset managers are increasingly shifting capital towards ESG investing. The interest among US investors in sustainable investments has grown exponentially. In 2019 investors deployed a record $20,6bn into US sustainable investment funds compared with 2018 ($5.5bn) these numbers almost quadrupled (Flood, 2020). Although still a tiny fraction of the total US fund assets, it stretches the new sentiment among investors. They are increasingly demanding action on climate change and thereby push asset managers to incorporate ESG measures into their investment processes.

According to a report from KPMG (2020), an increasing number of investors are requiring that their hedge fund managers incorporate ESG factors into their investment activities. In a survey among hedge fund managers, KPMG finds that 72 percent of hedge fund managers citing "growing interest among investors" as the biggest driver for them to embrace ESG principles[11]. Therefore, it might be very interesting to examine what the impact of ESG incorporation is on the financial performance of hedge fund targets.

[11] KPMG *"Hedge Fund Industry Pivots towards ESG Investing, according to KPMG report"* July 2020, https://home.kpmg/cn/en/home/news-media/press-releases/2020/02/hedge-fund-industry-pivots-towards-esg-investing.html

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Appendix

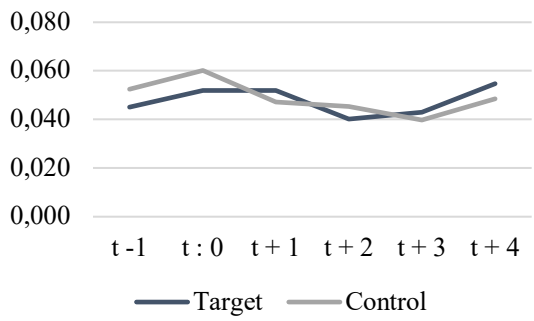
Table 18: Regression analysis of Cash and CFO

Regression	(1)	(2)	(3)	(4)
Dependent variable	**Cash**	**Cash**	**CFO**	**CFO**
t = 0 (event year)	0.0157	0.00348	-0.00609	-0.00667
	(0.0116)	(0.00558)	(0.00885)	(0.00594)
t + 1	0.00327	0.00404	-0.0140	-0.0113
	(0.0133)	(0.00698)	(0.00943)	(0.00707)
t + 2	0.0134	0.00970	-0.0133	-0.00372
	(0.0154)	(0.00808)	(0.0138)	(0.0110)
t + 3	0.0137	0.0119	-0.0118	-0.00157
	(0.0169)	(0.00971)	(0.0140)	(0.0105)
t + 4	0.00508	-0.00333	-0.00173	0.00724
	(0.0175)	(0.0112)	(0.0115)	(0.00808)
ln_Assets	-0.0253***	-0.0306***	0.0340***	0.0518***
	(0.00185)	(0.00520)	(0.00144)	(0.00586)
Ln_Age	-0.0286***	-0.0282***	0.0114***	-0.0165***
	(0.00325)	(0.00557)	(0.00244)	(0.00542)
Year FE	Y	Y	Y	Y
Firm FE	-	Y	-	Y
Industry FE	Y	-	Y	-
Observations	21,980	21,980	22,043	22,043
R-squared	0.488	0.870	0.385	0.748

Table 19: Graphical overview of the course of the mean for all metrics compared with the control group

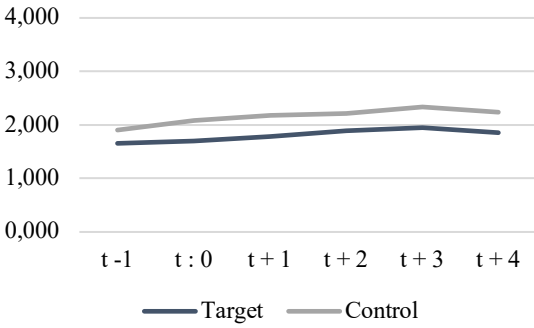
Panel A: Mean analysis of ROA

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	0.045	0.052	0.052	0.040	0.043	0.055
Industry adjusted	0.021	0.024	0.025	0.036	0.023	0.019
Control	0.052	0.060	0.047	0.045	0.040	0.048



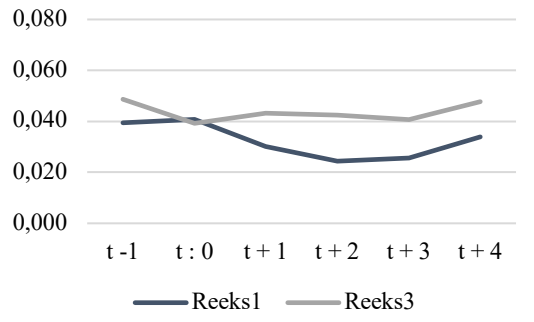
Panel B: Mean analysis of Tobin's Q

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	1.656	1.697	1.778	1.889	1.949	1.856
Industry adjusted	-0.545	-0.553	-0.464	-0.396	-0.437	-0.508
Control	1.904	2.085	2.174	2.218	2.336	2.233



Panel C: Mean analysis of CFO

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	0.040	0.041	0.030	0.024	0.026	0.034
Industry adjusted	0.010	0.013	0.010	0.002	0.002	0.018
Control	0.049	0.039	0.043	0.042	0.041	0.048



Panel D: Mean analysis of Cash

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	0.230	0.233	0.226	0.228	0.228	0.210
Industry adjusted	-0.003	0.003	0.001	0.010	0.006	-0.006
Control	0.225	0.212	0.213	0.213	0.219	0.216

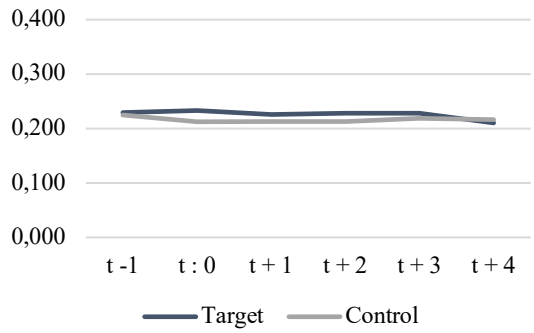
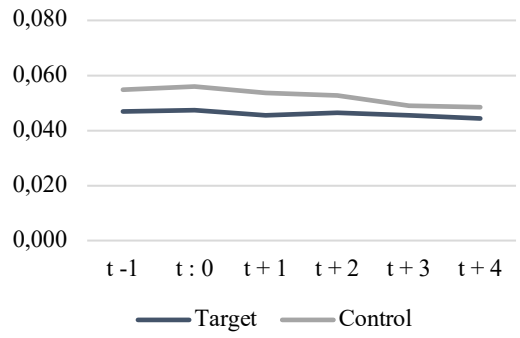


Table 19: Continued

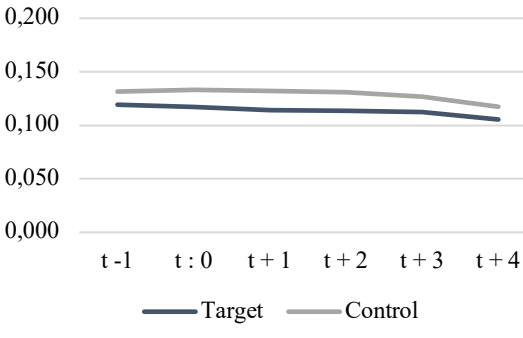
Panel E: Mean analysis of Capex

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	0.047	0.047	0.046	0.046	0.046	0.044
Industry adjusted	0.005	0.003	0.000	0.002	0.002	0.001
Control	0.055	0.056	0.054	0.053	0.049	0.048



Panel F: Mean analysis of Tobin's R&D

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	0.119	0.117	0.114	0.114	0.113	0.105
Industry adjusted	0.003	0.005	-0.002	0.001	0.000	-0.007
Control	0.131	0.133	0.132	0.131	0.127	0.117



Panel G: Mean analysis of CFI

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	-0.049	-0.050	-0.045	-0.039	-0.044	-0.063
Industry adjusted	0.009	0.015	0.026	0.022	0.015	0.004
Control	-0.086	-0.082	-0.083	-0.082	-0.073	-0.072

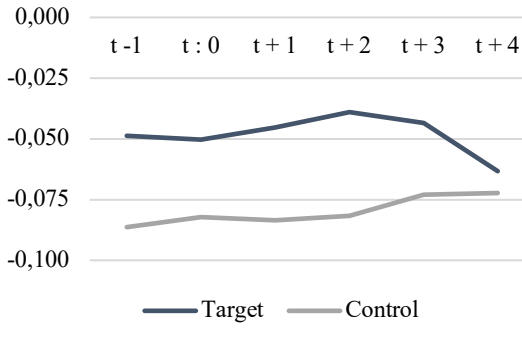
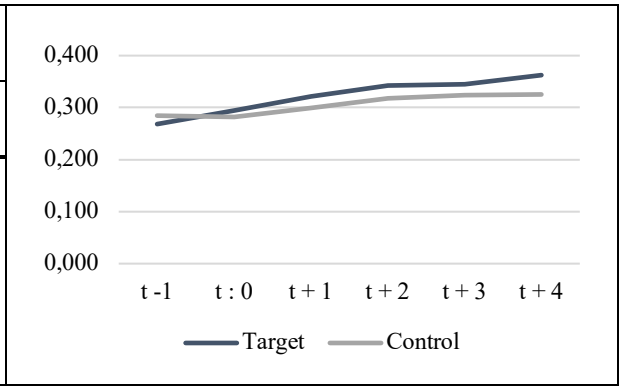


Table 19: Continued

Panel H: Mean analysis of Debt

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	0.268	0.295	0.321	0.342	0.345	0.362
Industry adjusted	-0.028	-0.009	0.005	0.014	0.008	0.019
Control	0.284	0.282	0.299	0.318	0.324	0.325



Panel I: Mean analysis of Dividend

	t -1	t = 0	t + 1	t + 2	t + 3	t + 4
Target	0.285	0.257	0.274	0.283	0.221	0.238
Industry adjusted	-0.098	-0.133	-0.030	-0.037	-0.159	-0.032
Control	0.287	0.191	0.243	0.248	0.148	0.266

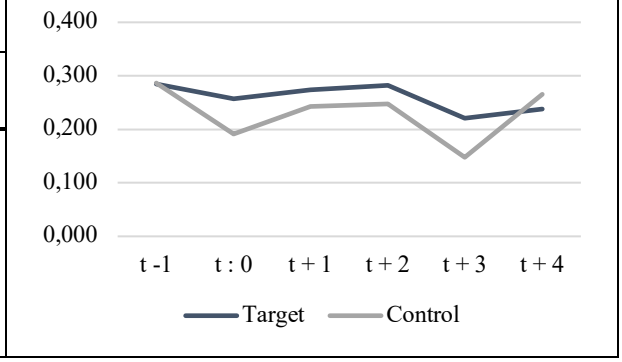


Table 20: Pearson product-moment correlation coefficient

	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	**ROA**	1.00										
(2)	**Tobin's Q**	-0.1719*	1.00									
(3)	**CFO**	0.8622*	-0.1806*	1.00								
(4)	**CFI**	0.0739*	-0.0436	0.1616*	1.00							
(5)	**Capex**	-0.1488*	-0.0226	-0.2529*	-0.3476*	1.00						
(6)	**R&D**	-0.5941*	0.2975*	-0.5322*	-0.0343	0.1500*	1.00					
(7)	**Cash**	-0.3828*	0.3533*	-0.3262*	-0.2758*	0.1555*	0.4584*	1.00				
(8)	**Debt**	0.0379	0.0253	0.0012	0.0843*	-0.0422	-0.0286	-0.2358*	1.00			
(9)	**Dividend**	0.1744*	0.0241	0.1691*	-0.0076	0.0818	-0.1590*	0.0598	-0.1094*	1.00		
(10)	**Ln_assets**	0.4410*	-0.2201*	0.4190*	0.1480*	-0.1271*	-0.4966*	-0.4406*	0.2006*	-0.0182	1.00	
(11)	**Ln_age**	0.0813*	-0.1135*	0.0316	-0.0626*	0.0979*	-0.0579	-0.1274*	0.0504	-0.0106	0.0795*	1.00

* indicates significance level of 1%