



SCHOOL OF
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Does Hedge Fund Activism Create Value?

A quantitative study of the European market

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Abstract

Using a data set of 139 events from 2006 to 2019, we demonstrate that announcements of hedge fund activism increases shareholder value in the short run. The abnormal return for the announcement of activism is approximately 6% over a [-10,+10] window. We find statistically significant abnormal returns both when the hedge fund purchases shares in the target firm, and when the hedge fund engages with the firm it owns a stake in. Further, we show that abnormal returns following hedge fund activism are higher in Britain and Ireland than in Continental Europe.

Key words: Hedge fund activism, abnormal returns, market efficiency, corporate governance

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1. Introduction

Shareholder activism, defined by Smith (1996) as "monitoring and attempting to bring about changes in the organizational control structure of firms (targets) not perceived to be pursuing shareholder-wealth-maximization goals", has been around since the early 17th century, when Isaac Le Maire used his rights as a shareholder to influence the Dutch East India Company (Poitras, 2007). Hedge fund activism is when hedge funds, as shareholders of a firm, carry out shareholder activism. Its roots can be traced back to the corporate raiders and U.S. takeover boom of the 1970s and 1980s, and although the United States remains the most important market for activists, hedge fund activism has been spreading in Europe, particularly after 2000 (Serekatis, 2014). Previously, the concentrated ownership structure of European companies — in which founding families often held a controlling stake - deterred hedge funds from investing in Europe. Recent years however, has seen a shift towards a more positive attitude to hedge fund activism. One prime example of this is the hedge fund Elliott Management amassing a 2,5% stake in Pernod Ricard, in which the Ricard family owns 25% of the voting rights (Saigol, 2018).

The objective of this study is to measure the short term impact of hedge fund activism on the share price of target firms in Europe. We have divided the activism into two categories, the event of the hedge fund purchasing shares in the target company, and the event of the hedge fund engaging with the firm it owns a minority stake in. These engagements consist of changes in management or board of directors, changes to payout policy, changes in business strategy and corporate restructuring. Hence, our purpose is to investigate the market reaction towards hedge fund activism and test if it creates shareholder value in the short run. We have defined the short run as a 21 day window, which is the length of our event window. By doing this we also intend to shed light on the topics of market efficiency and corporate governance in Europe. Moreover, we investigate if the short term impact of hedge fund activism differs between Continental Europe and Britain/Ireland. The motivation for doing this stems from the empirical observation that Britain and Ireland have a more dispersed ownership structure than Continental Europe (Faccio & Lang (2001), Porta et al. (1999)), which theoretically should mean that hedge funds activism is more effective in these two countries.

In this paper we have used an event study methodology with a [-10,+10] window. Our results show that hedge fund activism is followed by abnormal returns in the share price of target firms of 6% over all events, 7% when the event is purchase of shares in the target firm, and 4% when the event is the hedge fund engaging with the target firm. Further, we show that abnormal returns following hedge fund activism are higher in Britain and Ireland (9%) than in Continental Europe (4%).

Shareholder activism by hedge funds is a polarizing phenomenon, as it can reveal management inefficiencies and evoke positive change at the same time as it can impose stress on management and incur high costs. Furthermore, the incentives of the hedge funds are not necessarily aligned with shareholders who have a long-term perspective, as hedge fund investments tend to be short termed. Since these issues are of great importance to shareholders, our aim with this paper is to contribute to the literature with our findings, and be a source of inspiration for further research on this topic. Especially in Europe where not much research on hedge fund activism has been done.

The rest of this paper is organized as follows. In section 2 previous research on hedge fund activism is presented. In section 3, a case study of hedge fund activism is presented. Section 4 discusses the theoretical framework for the thesis. Section 5 focuses on the data and sample used in this paper. Section 6 outlines the methodology employed in the study. Section 7 presents and discusses the empirical results and section 8 is devoted to conclusions drawn from section 7.

2. Literature Review

Plenty of research has been done on hedge fund activism in the US, whilst studies on hedge fund activism in Europe is sparser. There are two possible reasons behind this. Firstly, hedge fund activism is a relatively new phenomenon in Europe and secondly, that new EU regulations (e.g. the Transparency Directive described in section 4) have not until recently forced hedge fund to be more transparent about their investments, which has made data on hedge fund activism more available. To our knowledge, the only study on the short-term impact of hedge fund activism in Europe was conducted by Becht et al. (2010). The authors of this paper evaluated 362 hedge fund interventions in Europe from 2000 to 2009 and found abnormal returns around the announcement day of 4,4%. The authors also found positive abnormal returns after announcements such as board and payout changes and restructurings, including divestitures and takeovers, suggesting that the market reacts positively towards the corporate governance change brought about by the activism

Perhaps the most comprehensive study done on hedge fund activism was conducted by Brav et al. (2008), who investigated 1059 activism events in the US between 2001 and 2006. The study found that hedge funds have strategic, operational and financial motives for their activism and that they are successful about two thirds of the time. Furthermore, they found the abnormal return around the announcement (from day 10 days preceding to 20 days after) to be approximately 7%, with no reversal the subsequent year. Their study also concluded that hedge funds seldom seek control and in most cases are non-confrontational, whilst the target firm experiences increases in payouts, operating performance and CEO turnover.

Studying the long-term economic consequences of hedge fund intervention, deHaan et al. (2018) suggests that the positive long-term returns found by earlier studies are largely driven by the smallest 20% of firms. They argue that on a value-weighted basis, the long-term returns are insignificantly different from zero. Furthermore, they found that for operating performance, prior results are a manifestation of abnormal trends in pre-activism performance. Using an appropriately matched sample, the authors found no evidence of abnormal post activism performance improvements.

Klein & Zur (2006) examined the causes and consequences of hedge fund activism in the US between 2003 and 2005. Their findings suggest that the target firm earns significant average abnormal returns around the announcement date of 4,3 %. However, the target firm does not increase its performance in the year following the investment. Instead, hedge funds extract cash from the target firm by increasing its debt capacity and giving out higher dividends. In contrast to the aforementioned study by Klein & Zur (2006), Bebchuck et al. (2015), who analyzed a large dataset of 2000 hedge fund interventions between 1994 and 2007, suggest that short term gains in performance following hedge fund activism does not come at the expense of long-term performance. The authors found that the initial stock price increase succeeding activist interventions correctly reflects the long-term consequences.

Brav et al. (2010) analyzed the motives for hedge fund activism as well as their short-term and long-term consequences for the target firm. They found that the most common motive is the belief that the target firm is undervalued followed by a business strategy motive, such as operational efficiency, growth strategies and business restructuring. Moreover, the authors suggested that there is a 6% abnormal return up to 20 days after the intervention as well as increased operating performance up to one year following the intervention. These findings are corroborated by Boyson & Mooradian (2011), who examine hedge fund activism between 1994 and 2005, and find evidence that hedge fund activism improve both short-term stock performance and operating performance of their targets. According to the authors the largest improvements in performance happen where activist seek corporate governance changes and reduction in excess cash.

Overall, the literature seems to be in agreement that hedge fund activism is followed by an increase in the target firm's share price in the short run (up to 20 days ensuing the activism) and hence that it is value creating for shareholders. With regards to the long-term impact of hedge fund activism on the target firm the literature is more split, with some studies claiming that hedge fund's short sighted goals come at the expense of long-term success, whilst others argue that it has a positive long-term impact.

3. Case study

In order to illustrate what the nature of hedge fund activism can be like, and the impact it can have on the target firm's corporate governance and business strategy, a case study will be presented below. The case study is about the hedge funds Elliott Management and Cevian Capital's activist interventions in Thyssenkrupp AG.

3.1 Case: Thyssenkrupp AG

Thyssenkrupp AG is a German multinational conglomerate with focus on industrial engineering and steel production. The company is based in Duisburg and Essen and divided into 670 subsidiaries worldwide. It is one of the Europe's largest steel producers by revenue (Bloomberg, 2019). In 2013 Cevian Capital disclosed that it had amassed a 5,2% stake in Thyssenkrupp. The investment was at the time welcomed by Thyssenkrupp CEO Heinrich Hiesinger who said "With Cevian Capital as a new investor we are gaining a renowned European major shareholder who also has extensive industrial experience in Germany". Cevian's reason for the investment was that they thought Thyssenkrupp was undervalued and was convinced of its long-term potential. The share price rose 5,7% after Cevian revealed its stake (Sheahan & Inverandi, 2013). In early 2014 Cevian gained a seat on the board of Thyssenkrupp and by 2018 the Swedish hedge fund had increased its stake to 18% (Steitz & Inverandi, 2018).

In May of 2018 the hedge fund Elliott Management announced that it had built up a significant stake in Thyssenkrupp, although it did not disclose the exact amount. The stock responded to the announcement by rallying 8,5%. By this time, Thyssenkrupp's management was under significant pressure from Cevian who thought the firm needed to untangle the complicated structure of its operations and cut ballooning cost. Thyssenkrupp's shares had lost 30% of its value since Hiesinger became its CEO in 2011 and its revenue was barely meeting expectations (Henning & Wilkes, 2018). Elliott joined Cevian in voicing its displeasure over Thyssenkrupp's complicated conglomerate structure. "What Thyssenkrupp needs (is) more freedom to act by the corporate divisions, a more entrepreneurial approach, leaner headquarters and a more agile, flexible structure to seize opportunities", Elliott executive Franck Tuil told the German Daily (Schuetze, 2018).

In July of 2018, shortly after Thyssenkrupp completed a merger with Tata Steel Ltd., a deal widely considered a failure amongst investors and labor unions, CEO Heinrich Hiesinger resigned. Soon thereafter, Chairman Ulrich Lehner, who was an avid supporter of Hiesinger, followed him out the door. Cevian and Elliott, who were dissatisfied with Hiesinger and openly critical of the way he ran Thyssenkrupp, supported his resignation. Following his resignation, Lehner voiced his displeasure with the hedge funds and said they had engaged in “psycho terror” with the management of Thyssenkrupp (Henning & Wilkes (2018), Taylor (2018)).

Finally, in late September of 2018, after years of pressure from Cevian and Elliott to simplify its complex conglomerate structure, the management of Thyssenkrupp decided to split the firm in two. The decision meant that the elevators, car parts and plant engineering business was spun off into Thyssenkrupp Materials, with the remaining part of the company focusing on capital goods (Steitz et al., 2018). Since then the stock has continued to struggle, losing 37% in the 7 months following the split.

4. Theoretical Framework

4.1 Efficient Markets and Price Predictability

The efficient market hypothesis states that financial markets are efficient with respect to a particular information set, when prices aggregate all available information. Previously, this definition meant that price movements in financial markets were unpredictable and all evidence of price predictability was an indication of inefficient markets. However, more recent studies have shown that return predictability and efficient markets are not incompatible, because return predictability arises naturally in a world with time-varying expected returns (van Nieuwerburgh & Koijen (2009), Ferson (2018)). There are three forms of the EHM. The weak-form states that stock prices already reflect all information that can be derived by studying market trading data, such as history of past prices. The semistrong-form of the EHM says that all publicly available information regarding the prospect of a firm must always be reflected in stock prices. Lastly, the strong-form of the EHM states that stock prices

reflect all information relevant to the firm, including information available only to company insiders (Bodie et al., 2014).

The fact that the literature regarding hedge fund activism has found abnormal stock returns in days preceding the announcement of the stock purchase by the hedge fund, indicates that the strong-form of the EHM does not hold. If it did, stock prices would not move upward before the announcement date, and investors trading on leaked information not known to the public would not be able to earn abnormal returns. Furthermore, the abnormal returns found in previous studies around the announcement date would imply that the semistrong-form of the EHM does not either hold. However, as noted above, price predictability is not necessarily a violation of the EHM. The increase in stock prices might reflect the expected benefit of hedge fund intervention adjusted for the equilibrium probability that the hedge fund continues with activism and succeeds (Brav et al., 2010). Meaning that the market reacts positively because there is an expectation that the hedge fund has identified inefficiencies and will improve the target firm by its activism.

Moreover, if market are efficient, abnormal returns to an investment strategy should persist only when the hedge funds has private information that is not known to the public. However, as pointed out by Brav et al., (2010) the value of the firm could potentially be affected by the activist's action. As a result, the hedge fund's superior information about its own intention to intervene becomes valuable. This would then suggest that the hedge fund does indeed have valuable information (its own intention to intervene in the target) not know to the public. Thus that the abnormal returns obtained by hedge funds are not necessarily proof of inefficient markets. The premise of valuable private information coming from one's own intention or action is consistent with the theoretical model of Bond & Eraslan (2009).

4.2 Agency Cost and Shareholder Activism

The principal-agent problem and the agency cost it causes arises from the fact that insiders (management) are supposed to act on behalf of shareholders (owners), who hold the formal control rights. However, due to shareholder's information

disadvantage, limited monitoring capabilities and the difficulty to coordinate actions against management, most of the control right ends up in the hands of management. Self-interested management does not necessarily always act in the best interest of shareholders, and their substantial discretion over the firm's decision making can be abused. The basic logic of large shareholders as a way to reduce agency costs is that with control rights concentrated in a few hands, concerted action to intervene and discipline management (by e.g. board representation) becomes much more feasible. Large shareholders, such as e.g. hedge funds and mutual funds, have stronger incentives, more resources and more time to monitor and discipline management than smaller shareholders (Jensen & Meckling, 1976).

Additionally, Klein & Zur (2006) argue that the main reason many institutions will not engage in activist campaigns is the free rider problem. Free riding is when the expected cost of the activist's actions exceed the benefit it expects to collect from these actions. This occurs because many shareholders share the benefits of activism, but only one shareholder, the activist, carries the costs of carrying out the campaign against the target firm. Institutional activism in the form of pension funds and mutual funds engaging with management of the invested firm was prevalent in the US in the 1980's, with aims of improving shareholder value (Gillan & Starks, 2000). Empirical evidence have found this type of activism by such institutions to be of limited effectiveness and suffer from the free rider problem (Black (1997), Karpoff (2001), Romano (2001)).

According to Klein & Zur (2006) the regulatory and legal environment surrounding hedge funds alleviate them from the free rider problem. Firstly, hedge funds are exempt from the diversification requirements which allows them, unlike mutual funds, to invest more than 5% of their assets in any stock (Kahan & Rock, 2007). Secondly, hedge funds can use stock lending or derivative markets to acquire voting rights, without owning a long position in the company's stock (Christoffersen et al. (2006), Hu & Black, (2006)). Further, hedge funds are not subject to the same compensations structure that mutual funds are. Hedge funds' compensation typically includes both a percentage of invested funds and a percentage of profits, which give the managers a huge personal incentive to engage in activist campaigns to earn abnormal returns. Lastly, hedge funds, in contrast to mutual and pension funds, often

times lack business relations with the target firm. This means that it does not face conflict of interests if it were to e.g. have to vote against management of the target firm on an issue (Brav et al., 2010).

Thus, the ability of hedge funds to carry out activism effectively could be an explanation for the positive market response to hedge fund activism. As significant minority shareholders, the hedge funds can monitor and discipline management of the target firm and influence them to take actions they consider favorable to shareholders, thereby reducing agency cost. In the event that the hedge funds get board representation, it has gone as far as it can in eliminating the principal-agent problem, since the hedge fund then effectively has some control over the target firm's decision making. Klein & Zur (2006) found that hedge funds had a 72% success rate in gaining board representation when seeking it and Brav et al. (2010) report that 19% of the hedge funds in their sample seek to influence the target firm by gaining a seat on the board.

However, it is important to note that studies have shown that Continental European firms to a high degree have concentrated and strong family ownership compared to firms in the UK and Ireland (Faccio & Lang (2001), Porta et al. (1999)). This theory could thus hold as an explanation for British firms but not for continental European firms. According to Bratton (2007), hedge fund activism has had great success in reducing the principal-agent problem, by getting the target firms to accede to the hedge funds demands. Meanwhile, Burkart et al. (1997) argue that while large ownership reduces agency cost, it comes with the drawback of reducing managerial initiative and non-contractible investment due to the fact that large ownership constitutes an ex ante expropriation threat.

4.3 Transparency Directive

Directive 2013/50/EU also known as the Transparency Directive is a set of regulations adopted by the European Securities and Market Authority (ESMA) issued in 2004 and the revised in 2013. The Directive was adopted in order to "ensure transparency of information for investors through a regular flow of disclosure of periodic and on-going regulated information and the dissemination of such

information to the public” (ESMA). According to the directive a shareholder, acquiring or selling shares, must notify the issuer within 4 days of such transactions if the acquisition or divestment of shares results in an amount of voting rights that falls below or exceeds 5%, 10%, 15%, 20%, 25%, 30%, 50% and 75%. The Directive is a minimum threshold which means that member countries are allowed to impose stricter laws (European Parliament, 2013).

5. Data and Sample

The data-sample considered in this paper originates from the Bloomberg database. Our criteria for inclusion of events in the sample is that the target firm must be listed on an European stock exchange. We included all events registered on the Bloomberg database where an European firm has been subject to hedge fund activism from 2006 to 2019. After filtering out the events that were not feasible to use due to the target firm not being publicly listed long enough, we ended up with 139 events. We scanned this sample of events through the Factiva database in order to categorize the events in one of our two categories. After doing this we ended up with 93 events in the category where hedge funds have purchased shares in the target firm, and 46 events in the category where the hedge fund engages with the firm it owns a shares in. These engagements consist of changes in management or board of directors, changes to payout policy (share buybacks or increase/decrease dividends), changes in business strategy and corporate restructuring. Corporate restructurings includes takeovers, divestures, spin-offs of non-core assets and blocking acquisitions.

Here it is in order to point out that there is a possibility that our sample suffers from selection bias. Selection bias emerges when the sample is not selected in such a way that proper randomization is achieved, thereby ensuring that the sample is not representative of the population intended to be analyzed. Selection bias generally leads to distortion of statistical analyses (Ellenberg, 1994). In the context of hedge fund activism the selection bias would occur because hedge funds target poorly managed firms with a depressed stock price, where they see potential to unlock value. The observed increase in share price following the activism would then be

partly a result of selection bias rather than the superior ability of the hedge funds to improve target firms in general. There is evidence that suggests that hedge funds do indeed target firms that are mismanaged. A study by Bethel et al. (1998) found that activist investors were more likely to invest their capital in firms with poor profitability. Becht et al. (2006), who studied the UK activist investor Hermes, reported that Hermes preferred to invest in under-performing companies.

Table 1 in appendix shows the number of target firms originating from each country. 40% of the target firms in our sample are British. A possible explanation for this could be, as discussed in section 3, that British firms to a much lesser degree than Continental Europe have concentrated ownership, which makes it easier for the hedge fund to exert its influence in the target firm. Table 2 in the appendix shows the descriptive statistics for the sample. The average market cap of the target firm at the time of the event in our sample is 11,9 EUR billion (median 2,2 Billion EUR). Hedge funds tend to avoid targeting larger firms because of the large amount of capital a hedge fund would need to invest in order to amass a meaningful stake. This result is robust with other studies including Clifford (2008) and Boyson & Mooradian (2007). Further, the distribution of the market cap of target firms is right skewed (table 2) indicating that a few of the target firms have a very large market cap, but most do not. The average holding period for the funds that have sold their stake were 979 days (median 695 days). This is longer than Becht et al. (2010) who found the average investment duration to be 621 days and Boyson and Mooradian (2007) who show that for hostile (non-hostile) events, the average holding period is 496 (773) days. However, it still shows that hedge fund activism is short termed in its nature.

The average initial ownership stake of the hedge funds in the sample is 5% (median 3,6%), which is consistent with Becht et al. (2010) and Brav et al. (2010) who find an average initial ownership stake of 6,1% and 6,3% respectively in their sample. 13% of the initial ownership stakes in our sample are larger than 10%. This shows that hedge fund do not seek to take control of their target but rather to facilitate value-enhancing changes as minority shareholders. Because they do not have a majority of the voting rights, they must often win support from other shareholders on issues that require shareholder voting. The daily stock price data for all firms used in the event study also comes from the Bloomberg database. Table 9 in appendix shows a

complete list of all the firms included in the sample together with the corresponding announcement date. 28% of the events have occurred since 2017, an indication that, as alluded to in the introduction, hedge fund activism has been increasing in Europe in later years.

6. Methodology

6.1 Event Study

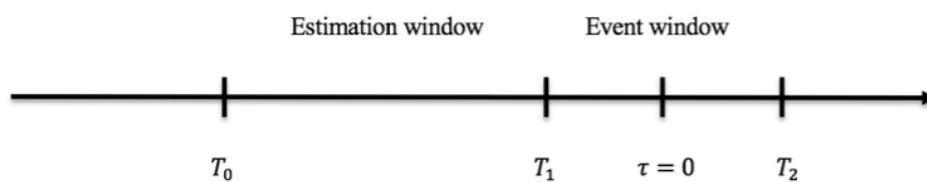
In order to measure the effect of hedge fund activism on the target's stock price, we implement an event study methodology. The event study measures the impact of a specific event on the value of a firm. The usefulness of such a study stems from the fact that, given an efficient market, the impact from an event will be reflected immediately in security prices. Therefore, a measure of the event's economic impact can be constructed using security prices observed over a short period of time (MacKinlay, 1997).

The first step in conducting an event study is to determine the event of interest and identify the time-period over which the security prices in this event will be examined. This period is called the event window. Our event of interest is the activism by the hedge fund in the target firm, either by the purchase of shares or engagement in any of the ways described in the previous section. The specific day of interest is the day the news of the activism by the hedge fund becomes public - the announcement day. However, prior research has found abnormal returns up to 10 days preceding and 20 days ensuing the announcement day (see e.g. Brav et al. (2008), Klein & Zur (2006), Bebchuk et al. (2015)). The reason the event window is set to start before the announcement day is due to leakage of information, meaning that investors get hold of information before official public release of the information.

As stated in section two, if the acquisition of shares exceeded the 5% threshold, the target firm must be notified no later than 4 days after. This window of four days from that the acquisition happened until it becomes public knowledge leaves room for possibility of insider trading and hence movement in the share price before the announcement day. Keown & Pinkerton (1981) studied 194 merger announcements

and found leakage to be a significant problem, leading to trading on nonpublic information up to 12 days before the official announcement of the merger. Thus, in order to make sure that we capture the full impact of the event on the firm's security price, we have decided to set out event window to 21 days, which means that the impact of the event will be measured from day -10 until day +10, with the announcement day being day 0.

Next we must decide the length of the estimation window, which is the period over which we estimate the normal returns. The estimation window in this study is set to 100 days, namely day -140 to day -41. It is important that the estimation window and event window do not overlap in order to prevent the event from having an impact on the estimation of normal returns. The figure below depicts the timeline of our event study,



The timeline is indexed τ . $\tau = T_0$ to T_1 represents the estimation window and $\tau = T_1 + 1$ to T_2 the event window. $\tau = 0$ is the announcement day.

6.2 Normal Returns

There are several ways to estimate the normal return in an event study. In this paper we have opted to use the market model. The market model is a statistical model which relates the return of a given security linearly to the return on the market portfolio. The model assumes that asset returns are jointly multivariate normal and independently and identically distributed through time. While these assumptions are strong, they generally do not lead problems, as the assumptions are empirically reasonable and inferences using the market model tend to be robust to deviations from the assumption. The market model is preferred to other statistical models such as the constant mean model and the multifactor model. The market model holds the advantage over the constant mean model of reducing the variance of the abnormal

return by removing the portion of the return that is related to variation in the market's return. This increases the ability to detect the event's impact on security prices. Furthermore, the gains from employing the multifactor model are generally limited due to the limited ability of additional factors to reduce the variance in abnormal returns. The equation for the market model is as follow (MacKinlay, 1997):

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where R_{it} and R_{mt} are the period- t returns on security i and the market portfolio respectively, and ε_{it} is the zero mean disturbance term for security i . α_i and β_i are the estimated parameters for the market model.

When estimating the market model parameters for a particular security we have used an index that corresponds to the market in which the security is traded. So for example when estimating the return on a security which is traded on the London Stock exchange we use the FTSE 100. Furthermore, we have chosen broad indices as proxies for the market portfolio in order to as best possible capture the variation in security returns. The market model parameters is estimated for each firm's security in our sample over the estimation period in order to then calculate the normal return over the event window.

6.3 Abnormal Returns

In order to measure the impact of the event on the target's stock price we must calculate the abnormal return. The abnormal return is the difference between the actual return observed during the event window and the expected normal return during that same window. The equation for the abnormal return when using the market model is:

$$AR_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau}$$

Where $R_{i\tau}$ is the observed period- t return on security i . $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the market model estimated parameters for security i . It can be seen from the equation above that the abnormal return is equal to the disturbance term of the market model,

calculated on an out of sample basis. The abnormal return is calculated for every day during the event window for each security. Then, in order to measure the overall impact of the event study on stock prices the abnormal returns are aggregated both through time and across securities. First the cumulative abnormal return (CAR) is calculated for each security by aggregating the abnormal returns throughout the event window:

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

Then the cumulative average abnormal return (CAAR) is calculated by taking an average of CAR across all the securities (MacKinlay, 1997):

$$CAAR(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^N CAR_i(\tau_1, \tau_2)$$

When testing the robustness of our event study, we must take into account that our event windows overlap, which means that we are facing the clustering problem and even-induced volatility. Boehmer et al. 2001 shows that the cross sectional test performs fairly well under conditions of event clustering and event induced volatility. The equation for the cross-sectional test is:

$$t_{CAAR} = \sqrt{N} \frac{CAAR}{S_{CAAR}}$$

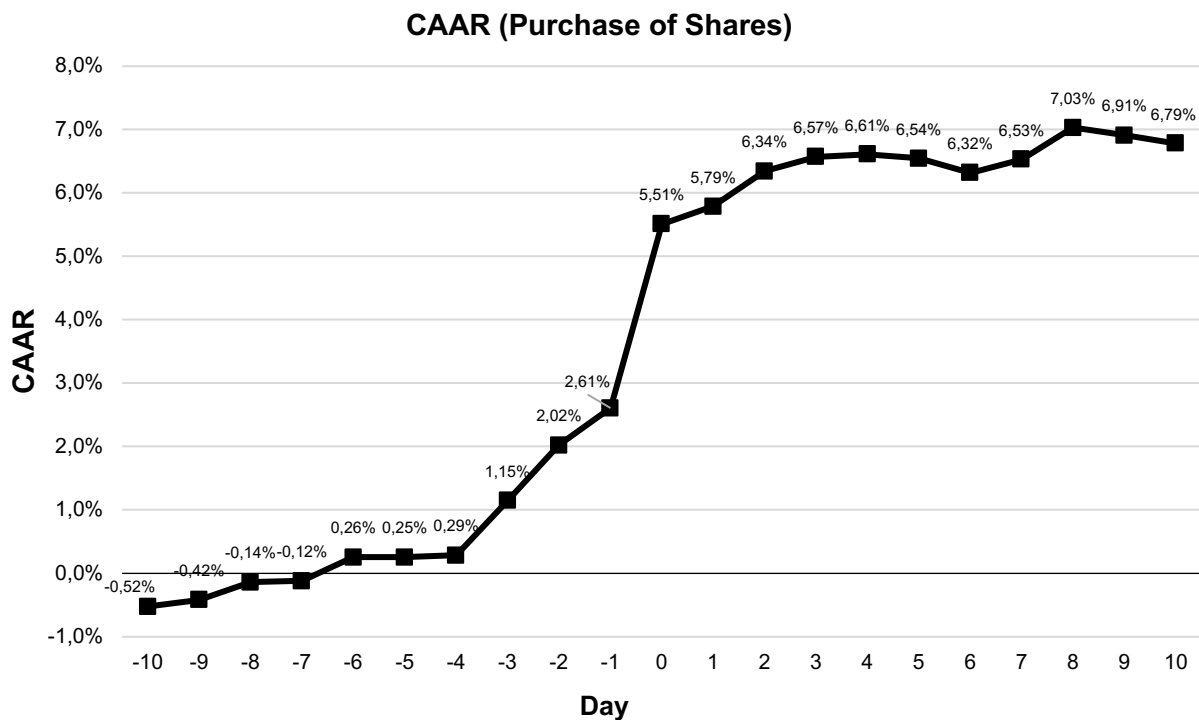
Where N is the number of observations and S_{CAAR} the standard deviation of CAAR over the event window. We used the cross sectional test to test if CAAR is significantly different from zero for each of the days during the event window.

7. Results

Figure 1 below presents the CAAR from the 21 day event window where the event is the purchase of shares in the target firm. There is a run up of about 2,3% from 4 days prior the announcement day to 1 day prior. Day 0 one sees a jump of about 3% and afterwards the CAAR fluctuates between 6% and 7% until 10 days ensuing the announcement. The CAAR on day +10 amounts to 6,79%, however the median CAR is only 4,34%, indicating that the distribution of CAR across the firms in the sample is right skewed, and that a few of the firms are capturing most of the abnormal returns. Table 3 in the appendix presents the CAAR for each day during the event window as well as the corresponding p-values. The CAAR is significantly different from 0 at the 1% level every day from day -2 until day 10. These findings, which are consistent with earlier studies by Brav et al. (2008) and Klein & Zur (2006), suggest that the market perceives hedge fund activism positively and hence, that it is value enhancing for shareholders in the short run.

Figure 1

The figure shows the CAAR over a [-10,+10] window, with day 0 being the announcement day. The announcement is that the hedge fund has purchased shares in the target company.



As discussed by Brav et al. (2008), the market reactions are not an unbiased estimate of expected benefits of activism. If prices were to adjust fully to the ex post effect of successful activism, hedge funds would have no incentive to continue with costly activism. Rather, market prices adjust to a level reflecting the expected benefit of intervention adjusted for the probability that the hedge fund continues with its activism and succeeds. According to Klein and Zur (2006) and Brav et al. (2008) hedge funds have a 60% and 66% success rate respectively in achieving their goals with activism. This line of reasoning also means that the observed increase in prices are not a violation of efficient markets, but rather in support of efficient markets, since the prices adjust to fair levels reflecting the expected benefits of activism. Further, we do not interpret the fact that the hedge funds in the sample earn abnormal returns from their trading strategy as a violation of efficient markets. The value of the firm is effected by the hedge fund's intervention and as a result, the hedge fund's superior information about its own intention to intervene becomes valuable. This would then suggest that the hedge fund has information not know to the public which allows it to earn abnormal returns.

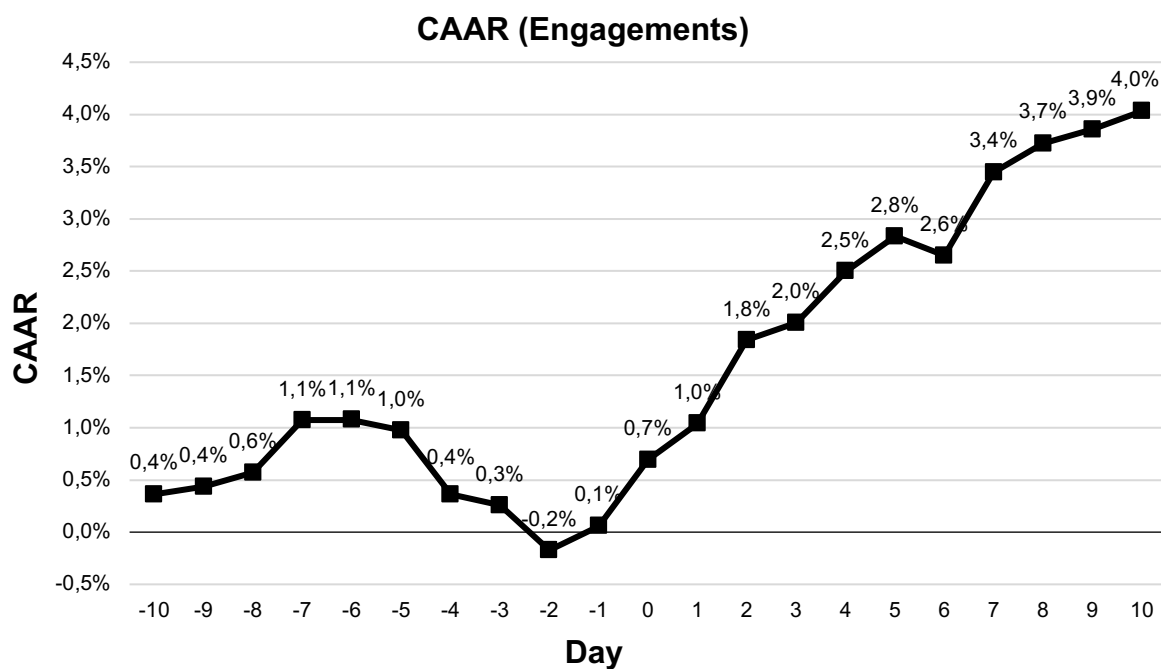
The fact that CAAR is significantly different from 0 three days prior to the announcement suggests that there is leakage of information and insider trading on this information. The increase in abnormal return at day -3 almost coincides with the minimum notification period of 4 days when the hedge fund must notify the target of its purchase. Also noteworthy is that there is not an immediate reversal following the announcement day but instead the CAAR stays at around 7% up to 10 days following the event.

Figure 2 beneath presents the CAAR for the 21 day event window where the event is the hedge fund engaging with the firm it owns shares in. These engagements consist of changes in management or board of directors, changes to payout policy (share buybacks or increase/decrease dividends), changes in business strategy and corporate restructuring. The CAAR trends upward from day -2 to day 10, where it reaches 4,0%. This finding is similar to that of Becht et al. (2010) and Boyson & Mooradian (2011) who also found significant abnormal returns from such hedge fund campaigns. The CAAR is significant every day from day 3 to day 10 at the either the 5% or 10% level (see table 4 in the appendix). This result implies that the hedge fund

creates shareholder value in the short run when it engages with management to drive changes in the target firm.

Figure 2

The figure shows the CAAR over a [-10,+10] window, with day 0 being the announcement day. The announcement is that the hedge fund has engaged with the firm it owns shares in. The engagements consist of changes in management or board of directors, changes to payout policy, changes in business strategy and corporate restructuring



The positive market reaction indicates that hedge funds can play an important role in exposing corporate governance inefficiencies. The result also refutes the stock picking hypothesis (Brav et al., 2010), which says that the increase in shares happens because the hedge funds simply identify undervalued firms and alert the market to this possibility, but do not add to the firms' fundamental value. However, one should keep in mind that the sample at hand most likely suffers from selection bias, in that it consist of poorly managed firms, where the hedge fund sees potential to unlock value. This means that the positive market reaction in part is a result of hedge funds investing in mismanaged firms with depressed share prices, rather than the hedge fund's superior ability to improve target firms.

That we did not find any significant abnormal returns in days prior to the announcement when it comes to engagements is not surprising, since the hedge

fund seemingly has no incentive to leak information that it plans to take action towards the target firm. Whereas when the hedge fund purchases shares in the target firm it must let the firm know of its actions (see Transparency Directive in section 4.3). Lastly, we recognize that having such a small sample is limiting, and having a larger sample would be preferable in order to arrive at even more conclusive evidence.

The CAAR's from the event study containing all 139 event are displayed in figure 3 in the appendix. Not surprisingly the test shows a positive market reaction. There is a run up of about 3,7% from 4 days prior the announcement day to day 0, after which CAAR trends up towards 6%. Each day from day -2 to day 10 are significant at the 1% level (table 5 in appendix) again suggesting that the activism is value-enhancing for shareholders.

Figure 4 below shows the CAAR from 1 day after the announcement day until 30 days after. The purpose of conducting this test is to see if individual investors with no insider information could profit from trading on the news of hedge fund activism. There is an increase in CAAR from day 1 to day 4 of about 0,8%, after which the CAAR fluctuates between 0,8% and 1,55% up until day 30. The CAAR is significantly different from 0 at the 5% level in eight of the days and at the 10% level in seven of the days during the event window, leaving 15 days that are not statistically significant (see table 6 in appendix). Hence, the results suggest that one might be able to gain abnormal returns from trading on the news of hedge fund activism, but the evidence is not conclusive. Furthermore, after factoring in trading cost, the abnormal returns will be lower than the ones seen in figure 4 below.

Figure 4

The figure shows the CAAR over a [+1,+30] window, with the announcement day being day 0. The announcement is either that the hedge fund has purchased shares in the target company or engaged with it.

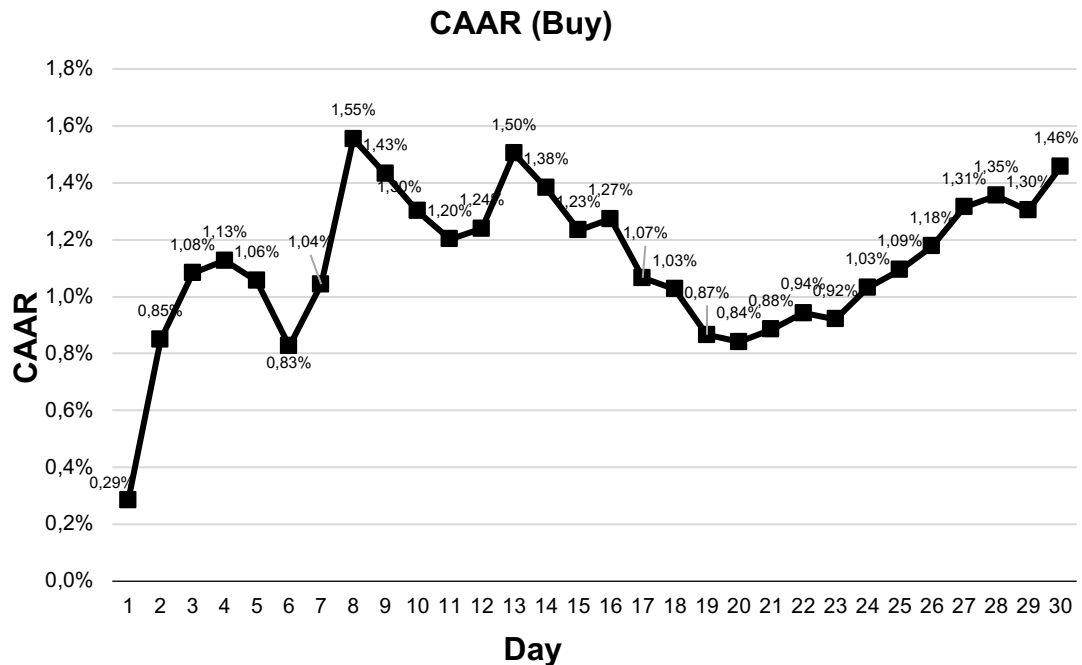


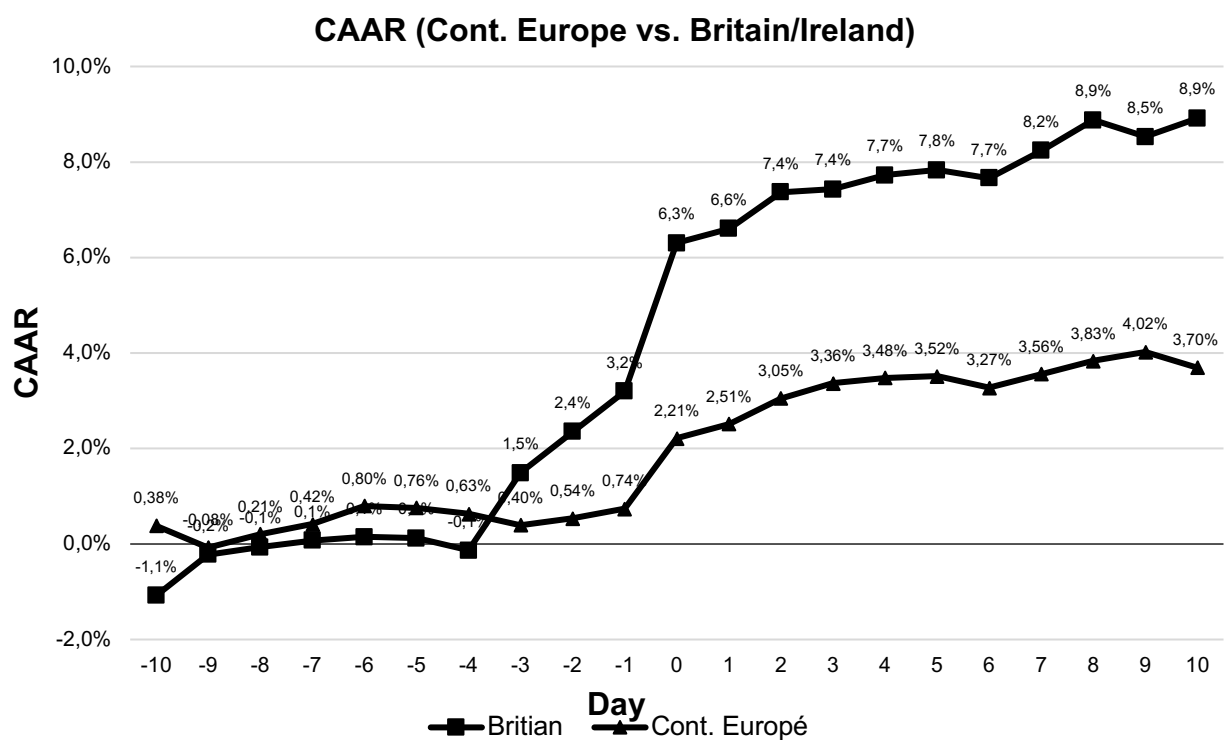
Figure 5 below reveals the results from the event study when dividing the sample into two subsamples, one containing firms listed on Continental European stock exchanges and one containing firms listed on either British or Irish stock exchanges. The Continental European subsample contains 81 events and the British/Irish subsample 58 events. The results for the two samples differ in important ways. The CAAR is considerably higher for the British/Irish firms than for the Continental European firms. For British/Irish firms the CAAR hikes up from -0,13% in day -4 to 6,3% on day 0 and then trends up towards 9% up until day 10, whilst for Continental European firms the CAAR reaches 4,0% at its highest point. This result is comparable to the findings of Becht et al. (2010) who in his cross country analysis only found significant abnormal returns in the UK and Germany, although the abnormal returns he found for the UK were lower.

Presumably the reason for this result is that Britain has a more dispersed ownership structure and that it thus is easier for the hedge fund to exert its influence and impact the target firm. Further, this result suggest that hedge funds play an important role in reducing agency cost and increasing shareholder value, or else there would not be a

significant difference in market reaction between the two regions. Every day from -1 to day 10 is significant at the 1% level in the British/Irish subsample, and day 0 to 10 for the Continental European subsample (see tables 7 and 8 in the appendix).

Figure 5

The figure shows the CAAR over a [-10,+10] , with the announcement day being day 0. The sample has been divided into Continental European Target firms and British/Irish target firms. The announcement is either that the hedge fund has purchased shares in the target company or engaged with it.



8. Conclusion

This paper examines the market reaction to hedge fund activism in Europe, an area that is largely untouched except for a study by Becht et al. (2010). Our sample of 139 events shows that hedge funds target smaller firms, which allows them to amass a significant stake with less capital, and they do not seek to take control of their target, but instead to influence it as minority shareholders. We analyze the market reaction to both the announcement of shares being bought in the target firm and the announcement of hedge funds engaging with the firm it owns a stake in. Our event studies demonstrate significant abnormal returns around the announcement date for

both types of activism (4% CAAR for announcement of engagements, 7% CAAR for purchase of shares and 6% CAAR over all events, over a [-10,+10] window), meaning that hedge fund activism creates shareholder value in short run. Further, the fact that share prices increase when it is announced that the hedge fund attempts to drive change in the target firm, indicates that hedge fund activism can exploit corporate governance inefficiencies, and thereby reduce agency cost. We interpret the increase in share price as an adjustment to a level reflecting the expected benefit of intervention adjusted for the probability that the hedge fund continues with its activism and succeeds.

However positive the market reactions, it still appears doubtful if performing a trading strategy based on announcements of hedge fund activism would be profitable. The 30 day event study ensuing the announcement showed significant abnormal returns half of the days, not factoring in trading cost. Most of the gains are captured at the announcement day and the days leading up to the announcement day. Significant CAAR three days prior to the announcement of purchase of shares indicates that there is information leakage and insider trading. Moreover, an analysis of the difference in hedge fund activism between Britain and Ireland, who have a more dispersed ownership structure, and Continental Europe, who has a more concentrated ownership structure, show considerably higher abnormal returns for British and Irish firms. This result was in line with our expectations, since a more dispersed ownership structure should mean that the hedge fund activism is more effective.

To conclude, we want to point out that this study concerns the short run impact of hedge fund activism. Our results show that hedge fund activism is value enhancing for shareholder in the short run (10 days ensuing the announcement). Thus, it seems as if hedge funds, as shareholder that monitor and seek to make changes to the target firm, can add value for other shareholder through its activism. As such, this paper does not deal with the long run effect of hedge fund activism and how it effects the operating performance of the target firm. These are critical questions that require further research in order to understand the full impact of hedge fund activism in Europe. Doing this would also allow to measure the correlation between short term increase in share price and post activism success.

Reference List

- Becht, M., Franks, J. and Grant, J. (2010). Hedge Fund Activism in Europe. *SSRN Electronic Journal*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1616340
- Becht, M., Franks, J., Mayer, C. and Rossi, S. (2009). Returns to Shareholder Activism: Evidence from a Clinical Study of the Hermes UK Focus Fund. *The Review of Financial Studies*, Vol. 22, No. 8, pp. 3093-3129.
- Bebchuck, L., Brav, A. and Jiang, W. (2015). The Long-Term Effects of Hedge Fund Activism. *Columbia Law Review*, Vol. 115, No. 5, pp. 1085-1155.
- Bethel, E.J., Liebeskind, J. and Opler, T. (1998). Block share purchases and corporate performance. *Journal of Finance*, Vol. 53, No. 2, pp. 605-634
- Black, B. (1997). Shareholder Activism and Corporate Governance in the United States. *SSRN Electronic Journal*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=45100
- Bloomberg, (2019). Company Overview of *thyssenkrupp AG*. [online] Available at: <https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=841504> [Accessed 17 Apr. 2019].
- Bodie, Z., Kane, A. and Marcus, A. (2014). Investments, 10th Global Edition. *McGraw Hill Education*, pp. 350-355.
- Bond, P. and Eraslan, H. (2009). Information-Based Trade. *Journal of Economic Theory*, Vol. 145, No. 5, pp. 1675-1703
- Boyson, N. and Mooradian R. (2011). Corporate Governance and Hedge Fund Activism. *Review of Derivatives Research*, Vol. 14, No. 2, pp. 169-204.
- Bratton, W.W. (2007). Hedge Funds and Governance Targets. *Georgetown Law Journal*, vol. 95, no. 5, pp. 1375-1434.
- Brav, A., Jiang, W. and Kim, H. (2010). Hedge Fund Activism: A Review. *Foundations and Trends in Finance*, Vol. 4, No. 3, pp. 185-246.
- Boehmer, E., Musumeci, J. and Poulsen B.A. (1991). Event-study Methodology Under Event-Induced Variance. *Journal of Financial Economics*, Vol. 30, No. 2, pp. 253-272.
- Brav, A., Jiang, W., Partnoy, F. and Thomas, R. (2008). Hedge Fund Activism, Corporate Governance and Firm Performance. *The Journal of Finance*, Vol. 63, No. 4, pp. 1729- 1775.
- Burkart, M., Gromb, D. and Panunzi, F. (1997). Large Shareholders, Monitoring, and the Value of the Firm. *The Quarterly Journal of Economics*, Vol. 112, No. 3, pp.693-728.
- Christoffersen, S.K., Géczy, C., Musto, K.D. and Reed, V.A. Vote Trading and Information Aggregation. *The Journal of Finance*, Vol. 62, No. 6, pp. 2897-2929.
- Clifford, C. (2008). Value Creation or Destruction? Hedge Funds as Shareholder Activists. *Journal of Corporate Finance*, Vol. 14, pp. 323-336.

Dehaan, E., Larcker, D. F., & McClure, C. (2018). Long-Term Economic Consequences of Hedge Fund Activist Interventions. *SSRN Electronic Journal*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3260095

European Parliament (2013). DIRECTIVE 2013/50/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. *Official Journal of the European Union*.

Esma.europa.eu. (2019). *Transparency Directive*. [online] Available at: <https://www.esma.europa.eu/regulation/corporate-disclosure/transparency-> [Accessed 15 Apr. 2019].

Ellenberg, J.H. (1994). Selection Bias in Observational and Experimental Studies. *Statistics in Medicine*, Vol. 13, No. 5-7, pp. 557-567.

Faccio, M. and Lang, L. (2001) The Ultimate Ownership of Western European Corporations. *Journal of Financial Economics*, Vol. 65 Issue 3, p365-395.

Ferson W.E. (2018) Stock Price Predictability. In: Macmillan Publishers Ltd (eds) *The New Palgrave Dictionary of Economics*. Palgrave Macmillan, London.

Gillan, S. and Starks, L. (2000). Corporate Governance Proposals and Shareholder Activism: The Role of Institutional Investors. *Journal of Financial Economics*, Vol, 57, No. 2, pp.275-305.

Henning, E & Wilkes, W. (2018). Thyssenkrupp CEO Resigns Under Growing Shareholder Backlash. *Bloomberg*, [online]. Available at: <https://www.bloombergquint.com/business/thyssenkrupp-ceo-asks-to-step-down-after-steel-joint-venture> [Accessed 18 Apr. 2019].

Henning, E & Wilkes, W. (2018). Elliott is Said to Purchase Stake in Germany's Thyssenkrupp. *Bloomberg*, [online]. Available at: <https://www.bloomberg.com/news/articles/2018-05-22/elliott-is-said-to-purchase-stake-in-germany-s-thyssenkrupp> [Accessed 17 Apr. 2019].

Hu, H. and Black, B. (2007). Hedge Funds, Insiders, and the Decoupling of Economic and Voting Ownership: Empty Voting and Hidden (morphable) Ownership. *Journal of corporate finance*, Vol. 13, No. 2-3, pp. 343-367.

Jensen, M. C. and Meckling W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, Vol. 3, No. 4, pp. 305–360.

Kahan, M. & Rock, B.E. (2007). Hedge Funds in Corporate Governance and Corporate Control. *Corporate Governance Law review*. Vol. 3, No. 2, pp.134-205.

Karpoff, J. (2001). The Impact of Shareholder Activism on Target Companies: A Survey of Empirical Findings. *SSRN Electronic Journal*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=885365

Keown, A. and Pinkerton J. (1981). Merger Announcements and Insider Trading Activity: An Empirical Investigation. *The Journal of Finance*, Vol. 36, No. 4, pp.855-869.

- Klein, A. and Zur, E. (2006). Hedge Fund Activism. *SSRN Electronic Journal*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1291605
- MacKinlay, A.C. (1997). Event studies in economics and finance. *Journal of economic literature*, Vol. 35, No. 1, pp.13–39.
- Meggison, W. (1990). Restricted Voting Stock, Acquisition Premiums, and the Market Value of Corporate Control. *The Financial Review*, 25(2), pp.175-198.
- Porta, R., Lopez-De-Silanes, F. & Shleifer, A., 1999. Corporate Ownership Around the World. *Journal of Finance*, 54(2), pp.471–517.
- Poitras, G. (2006). *Pioneers of financial economics*. Cheltenham: Edward Elgar, pp. 45-64
- Saigol, L. (2019). Activist investors are on the march in Europe. *MarketWatch*, [online]. Available at: <https://www.marketwatch.com/story/activist-investors-on-the-march-in-europe-2018-12-13> [Accessed 17 Apr. 2019].
- Serekatis, A. (2014). Hedge Fund Activism Coming to Europe: Lessons from the American Experience. *Brooklyn Journal of Corporate, Financial & Commercial Law*, Vol. 8, No. 2, pp. 438-469.
- Schuetze, A. (2018). Activists Renew Call for Structural Change as Thyssenkrupp Lowers Guidance. *Reuters*. [online]. Available at: <https://www.reuters.com/article/us-thyssenkrupp-elliott/activists-renew-call-for-structural-change-as-thyssenkrupp-lowers-guidance-idUSKBN1KL31Q> [Accessed 17 Apr. 2019].
- Sheahan, M. & Inverardi, M. (2019). Activist Investor Raises Stake in Thyssen. *Reuters*, [online] Available at: <https://uk.reuters.com/article/uk-thyssenkrupp-shareholder-idUKBRE98O0IG201309255> [Accessed 17 Apr. 2019].
- Smith, M. (1996). Shareholder Activism by Institutional Investors: Evidence from CalPERS. *The Journal of Finance*, vol. 51, No.1, pp.227-252.
- Steitz, C., Inverardi, M. & Käckenhoff, T. (2018). Thyssenkrupp Gives in to Shareholder Pressure to Split in Two. *Reuters*, [online] Available at: <https://www.reuters.com/article/us-thyssenkrupp-restructuring-exclusive/thyssenkrupp-gives-in-to-shareholder-pressure-to-split-in-two-idUSKCN1M71HV>
- Taylor, E. (2018). Thyssenkrupp Investor Elliott Demands Appointment of New 'External' CEO. *Reuters*, [online] Available at: <https://www.reuters.com/article/us-thyssenkrupp-ceo-elliott/thyssenkrupp-investor-elliott-demands-appointment-of-new-external-ceo-idUSKBN1K90XI>
- Romano, R. (2000). Less Is More: Making Shareholder Activism A Valued Mechanism Of Corporate Governance. *Yale Journal of Regulation*, Vol. 18, pp. 174-251.
- van Nieuwerburgh S., Koijen R.S.J. (2009) Financial Economics, Return Predictability and Market Efficiency. In: Meyers R. (eds) *Complex Systems in Finance and econometrics*. Springer, New York, NY

Appendix

Figure 3

The figure shows the CAAR over a [-10,+10] window, with the announcement day being day 0. The announcement is either that the hedge fund has purchased shares in the target company or engaged with it.

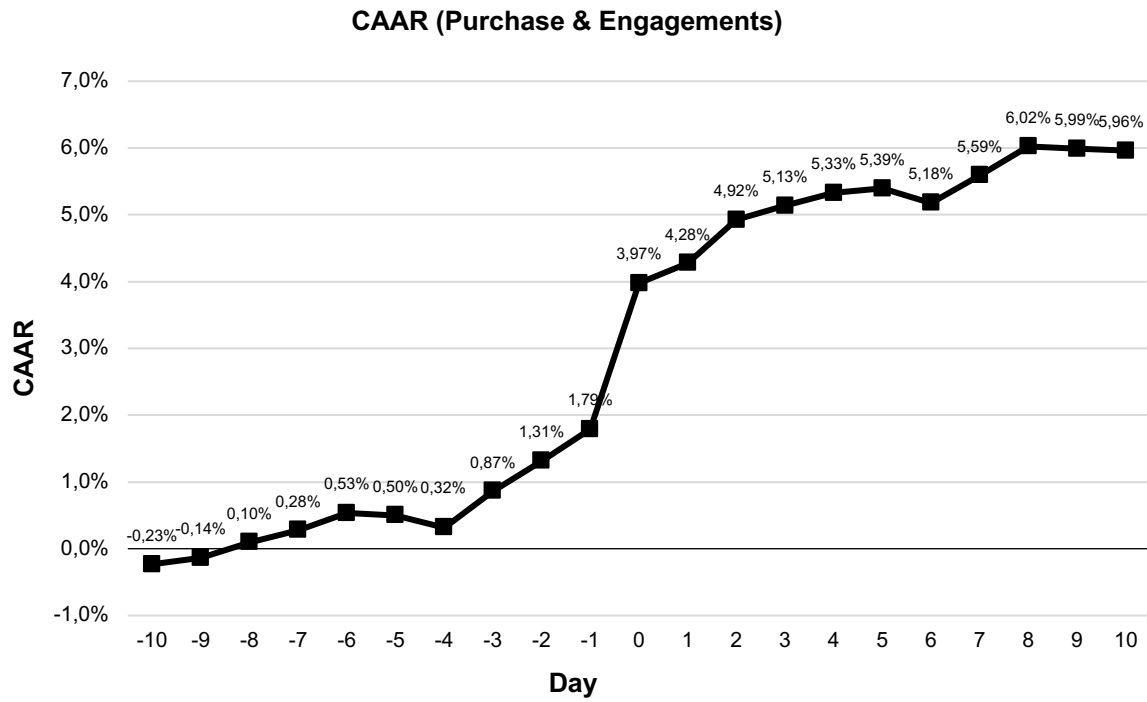


Table 1

The table shows the number as well as percentage of target firms from each country.

Country	Count	% of total
<i>Austria</i>	6	4%
<i>Britain</i>	55	40%
<i>Czech Republic</i>	1	1%
<i>Denmark</i>	1	1%
<i>Finland</i>	1	1%
<i>France</i>	12	9%
<i>Germany</i>	23	17%
<i>Ireland</i>	5	4%
<i>Israel</i>	1	1%
<i>Italy</i>	5	4%
<i>Luxembourg</i>	1	1%
<i>Netherland</i>	5	4%
<i>Portugal</i>	1	1%
<i>Spain</i>	2	1%
<i>Sweden</i>	6	4%
<i>Switzerland</i>	14	10%
Total	139	100%

Table 2

The table shows the sample distribution of the market cap (in billions) of the target firm, the initial ownership stake taken by the hedge fund and the number of days the hedge fund holds its stake in the target firm.

Percentile	Market Cap (M Euro)	Initial O/S (%)	Investment Duration (days)
5%	43	0,8%	84
25%	452	2,0%	317
50%	2184	3,6%	695
75%	10690	5,8%	1402
95%	55296	17,8%	2706

Table 3 – CAAR [-10+10] day window (purchase of shares)

The table shows the CAAR for each day during the [-10,+10] event window, with day 0 being the announcement day. The announcement is that the hedge fund has purchased shares in the target company. The table also presents the t-stat and the corresponding p-value for each day. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively.

Day	CAAR	t-stat	p-value	Significance
-10	-0,52%	-1,36	0,911	
-9	-0,42%	-0,96	0,830	
-8	-0,14%	-0,31	0,620	
-7	-0,12%	-0,23	0,590	
-6	0,26%	0,46	0,325	
-5	0,25%	0,40	0,344	
-4	0,29%	0,44	0,332	
-3	1,15%	1,64	0,053	*
-2	2,02%	3,04	0,002	***
-1	2,61%	3,16	0,001	***
0	5,51%	5,53	0,000	***
1	5,79%	5,57	0,000	***
2	6,34%	5,82	0,000	***
3	6,57%	5,88	0,000	***
4	6,61%	5,83	0,000	***
5	6,54%	5,56	0,000	***
6	6,32%	5,30	0,000	***
7	6,53%	5,39	0,000	***
8	7,03%	5,70	0,000	***
9	6,91%	5,53	0,000	***
10	6,79%	5,49	0,000	***

Table 4 – CAAR [-10,+10] day window (engagement)

The table shows the CAAR for each day during the [-10,+10] event window, with day 0 being the announcement day. The announcement is that the hedge fund has engaged with the firm it owns shares in. The table also presents the t-stat and the corresponding p-value for each day. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively

Day	CAAR	t-stat	p-value	Significance
-10	0,36%	1,04	0,152	
-9	0,43%	0,96	0,170	
-8	0,57%	0,94	0,176	
-7	1,07%	1,63	0,055	*
-6	1,08%	1,60	0,059	*
-5	0,97%	1,39	0,086	*
-4	0,36%	0,49	0,315	
-3	0,25%	0,31	0,378	
-2	-0,17%	-0,20	0,577	
-1	0,06%	0,06	0,477	
0	0,69%	0,56	0,290	
1	1,04%	0,79	0,217	
2	1,84%	1,23	0,112	
3	2,00%	1,39	0,085	*
4	2,50%	1,69	0,049	**
5	2,83%	1,84	0,036	**
6	2,65%	1,66	0,052	*
7	3,45%	2,07	0,022	**
8	3,72%	2,20	0,016	**
9	3,85%	2,24	0,015	**
10	4,03%	2,26	0,014	**

Table 5 – CAAR [-10+10] day window (purchase & engagement)

The table shows the CAAR for each day during the [-10,+10] event window, with day 0 being the announcement day. The announcement is either that the hedge fund has purchased shares in the target firm or that it has engaged with the firm it owns shares in. The table also presents the t-stat and the corresponding p-value for each day. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively.

Day	CAAR	t-stat	p-value	Significance
-10	-0,23%	-0,81	0,790	
-9	-0,14%	-0,42	0,662	
-8	0,10%	0,26	0,397	
-7	0,28%	0,66	0,256	
-6	0,53%	1,20	0,115	
-5	0,50%	1,02	0,154	
-4	0,32%	0,62	0,268	
-3	0,87%	1,58	0,059	*
-2	1,31%	2,41	0,009	***
-1	1,79%	2,72	0,004	***
0	3,97%	4,88	0,000	***
1	4,28%	5,03	0,000	***
2	4,92%	5,43	0,000	***
3	5,13%	5,62	0,000	***
4	5,33%	5,75	0,000	***
5	5,39%	5,63	0,000	***
6	5,18%	5,30	0,000	***
7	5,59%	5,60	0,000	***
8	6,02%	5,93	0,000	***
9	5,99%	5,82	0,000	***
10	5,96%	5,78	0,000	***

Table 6 – CAAR [+1,+30] day window

The table shows the CAAR for each day during the [+1,+30] event window, with day 0 being the announcement day. The announcement is either that the hedge fund has purchased shares in the target firm or that it has engaged with the firm it owns shares in. The table also presents the t-stat and the corresponding p-value for each day. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively.

Day	CAAR	t-stat	p-value	Significance
1	0,29%	1,15	0,127	
2	0,85%	1,94	0,027	**
3	1,08%	2,03	0,023	**
4	1,13%	2,03	0,022	**
5	1,06%	1,79	0,038	**
6	0,83%	1,38	0,086	*
7	1,04%	1,57	0,059	*
8	1,55%	2,24	0,014	**
9	1,43%	2,04	0,022	**
10	1,30%	1,83	0,035	**
11	1,20%	1,63	0,054	*
12	1,24%	1,50	0,069	*
13	1,50%	1,71	0,045	**
14	1,38%	1,60	0,057	*
15	1,23%	1,41	0,080	*
16	1,27%	1,43	0,078	*
17	1,07%	1,13	0,131	
18	1,03%	1,01	0,158	
19	0,87%	0,85	0,200	
20	0,84%	0,80	0,213	
21	0,88%	0,83	0,205	
22	0,94%	0,86	0,197	
23	0,92%	0,81	0,209	
24	1,03%	0,99	0,162	
25	1,09%	1,02	0,155	
26	1,18%	1,10	0,138	
27	1,31%	1,19	0,120	
28	1,35%	1,21	0,115	
29	1,30%	1,16	0,125	
30	1,46%	1,25	0,106	

Table 7 – CAAR [-10,+10] day window (Britian/Ireland)

The table shows the CAAR for each day during the [-10,+10] event window for the British/Irish subsample, with day 0 being the announcement day. The announcement is either that the hedge fund has purchased shares in the target firm or that it has engaged with the firm it owns shares in. The table also presents the t-stat and the corresponding p-value for each day. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively.

Day	CAAR	t-stat	p-value	Significance
-10	-1,08%	-1,84	0,964	
-9	-0,22%	-0,33	0,628	
-8	-0,06%	-0,09	0,535	
-7	0,07%	0,09	0,465	
-6	0,14%	0,17	0,432	
-5	0,12%	0,13	0,449	
-4	-0,13%	-0,13	0,552	
-3	1,49%	1,36	0,090	*
-2	2,35%	2,31	0,012	**
-1	3,20%	2,54	0,007	***
0	6,30%	4,04	0,000	***
1	6,60%	4,02	0,000	***
2	7,37%	4,19	0,000	***
3	7,43%	4,16	0,000	***
4	7,72%	4,30	0,000	***
5	7,83%	4,26	0,000	***
6	7,66%	4,10	0,000	***
7	8,24%	4,40	0,000	***
8	8,88%	4,72	0,000	***
9	8,53%	4,33	0,000	***
10	8,91%	4,58	0,000	***

Table 8 – CAAR [-10+10] day window (Continental Europe)

The table shows the CAAR for each day during the [-10,+10] event window for the Continental European subsample, with day 0 being the announcement day. The announcement is either that the hedge fund has purchased shares in the target firm or that it has engaged with the firm it owns shares in. The table also presents the t-stat and the corresponding p-value for each day. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively. ***,** and * denotes statistical significance at the 1%, 5% and 10% respectively

Day	CAAR	t-stat	p-value	Significance
-10	0,38%	1,70	0,046	
-9	-0,08%	-0,26	0,603	
-8	0,21%	0,59	0,280	
-7	0,42%	1,08	0,142	
-6	0,80%	1,78	0,039	
-5	0,76%	1,61	0,056	
-4	0,63%	1,40	0,082	
-3	0,40%	0,80	0,213	
-2	0,54%	0,97	0,168	
-1	0,74%	1,15	0,126	
0	2,21%	2,89	0,002	***
1	2,51%	3,19	0,001	***
2	3,05%	3,65	0,000	***
3	3,36%	4,03	0,000	***
4	3,48%	4,04	0,000	***
5	3,52%	3,85	0,000	***
6	3,27%	3,50	0,000	***
7	3,56%	3,61	0,000	***
8	3,83%	3,76	0,000	***
9	4,02%	4,09	0,000	***
10	3,70%	3,72	0,000	***

Table 9 – Sample

ACTIVIST	TARGET	Date
Ian Hannam	Ophir Energy Plc	2019-02-20
Cevian Capital AB	CRH Plc	2019-02-06
Cevian Capital AB	Nordea Bank Abp	2018-12-14
Elliott Associates LP	Pernod Ricard SA	2018-12-12
Amber Capital Asset Management LLP	Suez	2018-12-07
Elliott Associates LP	Bayer Ag-Reg	2018-12-07
Cevian Capital AB	Panalpina Welttransport -Reg	2018-10-25
Elliott Associates LP	Edp-Energias De Portugal Sa	2018-10-16
CIAM	Scor Se	2018-09-18
ValueAct Capital Partners LP	Horizon Discovery Group Plc	2018-09-17
Elliott Associates LP	Vodafone Group Plc	2018-07-30
Crystal Amber Fund Ltd	Cenkos Securities Plc	2018-07-26
Shareholder Value Management AG	Mears Group Plc	2018-07-05
Shareholder Value Management AG	Edp Renovaveis Sa	2018-06-15
Amber Capital Asset Management LLP	Tungsten Corp Plc	2018-06-14
Elliott Associates LP	Thyssenkrupp	2018-05-22
Western Gate Private Investments Capital Inc	Firstgroup Plc	2018-05-14
Crystal Amber Fund Ltd	Lagardere Sca	2018-05-03
Petrus Advisers Ltd	Moneta Money Bank As	2018-04-25
Wyser-Pratte	Ohb Se	2018-04-23
Petrus Advisers Ltd	Wienerberger Ag	2018-04-18
Gatemoore Capital Management LLC	Wincanton Plc	2018-04-16
Shareholder Value Management AG	Telecom Italia Spa	2018-04-14
Elliott Associates LP	Micro Focus International	2018-04-12
Crystal Amber Fund Ltd	De La Rue Plc	2018-04-09
CIAM	Koninklijke Ahold Delhaize	2018-03-23
Cevian Capital AB	Autoliv Inc	2018-03-01
Elliott Associates LP	Fidessa Group Plc	2018-02-21
ValueAct Capital Partners LP	Merlin Entertainment	2018-02-19
Elliott Associates LP	Uniper Se	2017-12-05
Elliott Associates LP	Smith & Nephew Plc	2017-10-10
Elliott Associates LP	GEA Group AG	2017-10-10
Petrus Advisers Ltd	Comdirect Bank AG	2017-09-12
Southeastern Asset Management	Millicom International Cellular SA	2017-09-04
Wyser-Pratte	Refresco Group NV	2017-08-14
Elliott Associates LP	NXP Semiconductors NV	2017-08-04
Corvex Management LP	Clariant AG	2017-07-04
Elliott Associates LP	Stada Arzneimittel AG	2017-07-04
Amber Capital Asset Management LLP	Mediaset S.p.A	2017-06-28
Third Point LLC	Nestle SA	2017-06-26
Crystal Amber Fund Ltd	Ocado Group PLC	2017-06-05
Active Ownership Capital Sarl	Schaltbau Holding AG	2017-06-02
Cevian Capital AB	LM Ericsson	2017-05-30
Western Gate Private Investments Capital Inc	FirstGroup PLC	2017-05-30
Elliott Associates LP	Akzo Nobel NV	2017-03-17
Active Ownership Capital Sarl	PNE Wind AG	2017-03-17
Petrus Advisers Ltd	Immofinanz AG	2017-03-14
Petrus Advisers Ltd	CA Immobilien Anlagen AG	2017-03-14
RBR Capital Advisors AG	GAM Holding	2017-02-27
CIAM	Zodiac Aerospace	2017-01-19
Teleios Capital Partners GmbH	SodaStream International Ltd	2016-11-08

ACTIVIST	TARGET	Date
Gatemoore Capital Management LLC	DX Group PLC	2016-09-16
CIAM	SFR Group SA	2016-09-14
Starboard Value LP	Perrigo Co PLC	2016-09-12
Elliott Associates LP	Poundland Group PLC	2016-07-14
Shareholder Value Management AG	John Menzies PLC	2016-07-04
Crystal Amber Fund Ltd	Northgate PLC	2016-06-30
Wyser-Pratte	Stada Arzneimittel AG	2016-06-27
Petrus Advisers Ltd	Stada Arzneimittel AG	2016-06-27
Knight Vinke Asset Management LLC	E.ON SE	2016-05-13
TCI Fund Management Ltd	Volkswagen AG	2016-05-06
Teleios Capital Partners GmbH	Fenner PLC	2016-04-27
Petrus Advisers Ltd	S Immo AG	2016-03-08
Cevian Capital AB	Rexel SA	2016-02-24
Alpine Select AG	London Stock Exchange Group PLC	2016-02-23
Crystal Amber Fund Ltd	Johnston Press PLC	2016-02-01
Elliott Associates LP	Ansaldo STS SpA	2016-02-01
Western Gate Private Investments Capital Inc	Stock Spirits Group PLC	2015-12-14
Elliott Associates LP	Dialog Semiconductor PLC	2015-11-09
NNS Holding	Adidas AG	2015-10-30
Petrus Advisers Ltd	Wacker Neuson SE	2015-10-20
Orange Capital LLC	C&C Group plc	2015-10-09
Gatemoore Capital Management LLC	French Connection Group PLC	2015-09-04
ValueAct Capital Partners LP	Rolls-Royce Holdings PLC	2015-07-31
Triam Fund Management LP	Pentair PLC	2015-06-30
Crystal Amber Fund Ltd	Grainger PLC	2015-06-25
Cevian Capital AB	ABB Group Ltd	2015-06-04
TCI Fund Management Ltd	KWG Kommunale Wohnen AG	2015-06-01
GO Investment Partners LLP	Premier Farnell PLC	2015-05-05
Parvus Asset Management LLP	William Hill PLC	2014-12-08
Amber Capital Asset Management LLP	Promotora de Informaciones S.A.	2014-11-14
Third Point LLC	Koninklijke DSM	2014-07-18
Marcato Capital Management LP	InterContinental Hotels Group PLC	2014-05-29
Crystal Amber Fund Ltd	Aer Lingus Group PLC	2014-02-28
Sherborne Investors Management LP	Electra Private Equity PLC	2014-02-25
Crystal Amber Fund Ltd	Wm Morrison Supermarkets PLC	2014-01-10
Cevian Capital AB	Volvo AB - B shares	2013-11-29
TCI Fund Management Ltd	Speedy Hire PLC	2013-11-29
Sandell Asset Management Corp	FirstGroup PLC	2013-11-06
Amber Capital Asset Management LLP	Nexans S.A.	2013-10-16
Cevian Capital AB	ThyssenKrupp	2013-09-26
Elliott Associates LP	Kabel Deutschland Holding AG	2013-09-03
Cevian Capital AB	G4S PLC	2013-08-08
Harwood Capital LLP	Airbus Group SE	2013-08-02
Harwood Capital LLP	UBS Group AG	2013-05-02
Damille Investments II Ltd	Northern Petroleum PLC	2012-12-28
Crystal Amber Fund Ltd	Thorntons PLC	2012-12-21
Elliott Associates LP	Alliance Trust PLC	2012-11-09
TCI Fund Management Ltd	Safran SA	2012-10-09
Amber Capital Asset Management LLP	Rockhopper Exploration PLC	2012-07-13
Worldview Capital Management SA	Petroceltic International PLC	2012-07-02
Petrus Advisers Ltd	Flughafen Wien AG	2012-02-08
Cevian Capital AB	Danske Bank	2011-11-22
Cevian Capital AB	Vesuvius PLC	2011-11-10

ACTIVIST	TARGET	Date
Cevian Capital AB	Bilfinger SE	2011-11-01
Knight Vinke Asset Management LLC	Carrefour SA	2011-03-09
ValueAct Capital Partners LP	Willis Group Holdings PLC	2010-09-03
Sherborne Investors Management LP	F&C Asset Management PLC	2010-08-17
Knight Vinke Asset Management LLC	Darty PLC	2010-06-25
Cevian Capital AB	Wolseley PLC	2010-06-24
Cycladic Capital Management Ltd	Sky Deutschland AG	2010-06-16
Cevian Capital AB	Demag Cranes AG	2010-05-21
Petrus Advisers Ltd	Conwert Immobilien Invest SE	2010-05-03
Crystal Amber Fund Ltd	Delta PLC	2010-03-05
Cevian Capital AB	Panalpina Weltransport	2010-01-27
Cevian Capital AB	Tieto Oyj	2009-11-12
Knight Vinke Asset Management LLC	Eni S.p.A.	2009-09-02
Toscafund Asset Management LLP	Findel PLC	2009-08-12
Cevian Capital AB	Old Mutual PLC	2009-06-01
Crystal Amber Fund Ltd	Pinewood Group PLC	2009-01-09
Principle Capital Investment Trust PLC	Sirius Real Estate Ltd	2008-08-11
GoldenPeaks Capital Partners AG	Ciba Holding AG	2008-07-18
Hanover Investors Management LLP	Fairpoint Group PLC	2008-06-25
Leo Fund Managers Ltd	Mitchells & Butlers PLC	2008-02-04
Cevian Capital AB	Munich Re	2007-12-07
Findim Group SA	Telecom Italia S.p.A	2007-11-13
GoldenPeaks Capital Partners AG	Valora Holding AG	2007-10-19
Knight Vinke Asset Management LLC	HSBC Holdings PLC	2007-09-04
Principle Capital Investment Trust PLC	Blacks Leisure Group PLC	2007-06-04
Laxey Partners Ltd	Implenia AG	2007-04-12
GoldenPeaks Capital Partners AG	Cham Paper Group Holding AG	2007-04-05
GoldenPeaks Capital Partners AG	STV Group PLC	2007-01-30
HBM Healthcare Investments AG	Basilea Pharmaceutica AG	2006-11-17
Centaurus Capital Ltd	ATOS Origin SA	2006-10-23
Cevian Capital AB	TeliaSonera AB	2006-10-09
Parvus Asset Management LLP	Volvo AB - A shares	2006-09-06
Cevian Capital AB	Volvo AB - A shares	2006-09-06
Principle Capital Investment Trust PLC	Photo-Me International PLC	2006-08-30
Sherborne Investors Management LP	Spirent Communications PLC	2006-08-08