

# Hedge Funds versus Private Equity Funds as Shareholder Activists in Germany – Differences in Value Creation

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## ABSTRACT

We investigate the valuation effects of German firms targeted by hedge funds and by private equity investors. We argue that both types of investors differ from other blockholders by their strong motivation and ability to actively engage and reduce agency costs. Consequently, we find positive abnormal returns following a change in ownership structure. However, these effects differ markedly between both investors, as proxy variables for agency costs only explain the market reaction for our private equity subsample. We conclude that private equity funds seem to be more successful at creating shareholder value, which could be due to their longer-term perspective and a higher adaptability to the surrounding corporate governance.

*JEL Classification:* G14, G32, G34, G38

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## 1. Introduction

It is well known that the separation of ownership and control can lead to agency problems when managers use investor funds to finance investment projects (Coase, 1937, Jensen and Meckling, 1976). Because managers control the capital, they may not act in the best interest of shareholders if the company does not impose a concentrated ownership structure. Numerous studies have addressed this problem and suggested mechanisms for managing it.<sup>1</sup> For example, Grossman and Hart (1980) and Shleifer and Vishny (1986) have posited that large shareholders should take on a monitoring role.<sup>2</sup>

Prior research has analyzed the effectiveness of large shareholders' monitoring activities, as well as their ability to directly influence corporate policy.<sup>3</sup> In theory, large investors can be very effective at solving agency problems. However, empirical research has found ambiguous evidence of successful changes in corporate policy.

Previous research usually distinguished between active and passive blockholders when considering their effects on corporate policy. However, Cronqvist and Fahlenbrach (2009) argue that activist shareholders can differ greatly from each other. They show that specific groups of active shareholders seem to be more successful at making changes in investment policy, financial policy, and operations. They conclude it is necessary to consider the presence of large and active blockholders, but it may be even more vital to determine who they are. Given blockholders' distinct ability to change corporate policy, we believe capital markets should react to engagements of financial investors who actively address agency problems in their target companies (Barber, 2007).

However, determining the impact of specific investors also requires considering the corporate governance system in which the targets are located. For example, firms in

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<sup>1</sup> See, for example, Shleifer and Vishny (1997), Aggarwal and Samwick (2006), and Becht, Bolton, and Roell (2003) and their citations.

<sup>2</sup> A large shareholder (blockholder) is defined as an entity that owns at least 5% of a firm's outstanding shares.

<sup>3</sup> See, for example, Barclay and Holderness (1992) and Cronqvist and Fahlenbrach (2009).

continental Europe do not tend to share a pure shareholder value orientation; rather, they are concerned about the interests and requirements of all stakeholders in the firm, including employees, banks, suppliers, and customers. In Germany, this stakeholder orientation is apparent in the co-determination concept and in the composition of the supervisory board.

In such an environment, it might be more difficult for active blockholders to be heard and to address the above-mentioned agency problem. Thus, this paper empirically investigates the valuation effects associated with hedge fund and private equity engagements in target firms in Germany, and the subsequent change in ownership structure.

To the best of our knowledge, this is the first study that relates market valuation effects to an active investor's ability to mitigate agency conflicts in a stakeholder-oriented environment. Hence, this paper contributes to the still limited body of literature on the market for corporate control by exploring the impact specific blockholders can have on a corporate governance system and its resistance to change.

It is obvious that both hedge funds and private equity funds seek to increase the market value of their pooled capital. Active engagement in publicly traded companies is a relatively recent popular strategy. Both hedge funds and private equity investors may be active shareholders, and their engagement may change a firm's objectives and value. However, their level of activism can differ substantially, depending on the level of funding and the management reimbursement structure of the funds.

For example, hedge funds can face the problem of capital withdrawals by investors if they underperform. Partnoy and Thomas (2007) find that hedge funds tend to trade more frequently than other institutional investors, which might be attributable to their funding structure. On the other hand, private equity funds are less subject to capital withdrawals, and can thus focus on longer investment horizons.

With respect to management compensation, it is important to note that hedge funds calculate their performance fees on unrealized capital gains, while private equity fund fees

(carried interest) are derived solely from realized capital gains. This can lead to the notion that hedge fund investors have a strong preference for short-term and trading-induced profits, which may translate into an aggressive activist strategy in their portfolio companies. Given their various investment strategies and specific organizational setups, however, we know nothing about how these new institutional investors would perform in a stakeholder-oriented economy.

For our study, we construct a unique hand-collected data set of 159 private equity and 67 hedge fund engagements in German exchange-listed companies between 1993 and 2007. We apply a standard event study methodology to analyze whether the engagement of these specific active investors is associated with an increase in shareholder value. We also examine whether increases in stock returns are related to several corporate characteristics and market variables, and whether those effects persist over time.

We first find that significant positive abnormal returns of around 4.5% are triggered by an announcement that a hedge fund or a private equity fund has acquired at least 5% of a company's voting rights. However, our cross-sectional results reveal that only private equity fund managers successfully address agency problems in their target firms. We believe this is due to their longer-term investment perspective and a higher adaptability to the local stakeholder-oriented corporate governance system as compared to hedge fund managers.

Second, we find that the long-lasting return drift to hedge fund and private equity target firm shareholders is significantly negative and statistically lower in magnitude for hedge fund targets. Over a 250-day period, the median buy-and-hold abnormal returns (BHARs) are -2.47% for private equity targets and -21.46% for hedge fund targets. We provide two explanations for this empirical finding.

First, both active investors operate in a distinct stakeholder environment, under co-determination and with other stakeholder groups represented on the supervisory board. Hedge funds may find it difficult to align their interests with advisory board members. Therefore, we

believe that the negative post-announcement stock performance of hedge fund targets may be a result of the capital markets misinterpreting hedge funds' investment intentions. It seems likely that a negative benchmark-adjusted performance is the result of an (initially) expected but (eventually) not realized reduction in agency costs. Second, we believe there may be general disappointment in the case of rampant speculation about a possible takeover and the related premium that does not ultimately occur (Greenwood and Schor, 2009).

The rest of the paper proceeds as follows. In section II, we differentiate among hedge funds and private equity funds with respect to their incentives and capabilities to reduce agency costs. Section III describes our data set, while section IV provides our empirical methodology and research design. Our results are reported in section V, and section VI provides our conclusions.

## **2. New Kids on the Block – Incentives and Capabilities of Hedge Fund and Private Equity Managers to Reduce Agency Costs**

Based on the agency-theoretical background provided by Jensen (1986) and Shleifer and Vishny (1986), blockholders often have the voting power to enhance value by reducing agency costs.<sup>4</sup> Nevertheless, blockholders do not act homogeneously, as many models assume; rather, they differ in their incentives and capabilities to become active (see Cronqvist and Fahlenbrach (2009) for a detailed discussion). Therefore, a recent strand in the corporate governance literature argues that even though hedge fund and private equity managers have the highest incentives and capabilities to become active, researchers should distinguish between them.<sup>5</sup> Consequently, this section focuses on these two new institutional investors and explores their incentives and capabilities to become successful active investors by reducing agency costs in their target firms.

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<sup>4</sup> For an overview, see, e.g., Shleifer and Vishny (1997).

<sup>5</sup> For more insight into hedge funds and private equity funds, see, for example, Fung and Hsieh (1999) and Gompers and Lerner (2006). A detailed comparison between both types of investors can be found in Achleitner and Kaserer (2005), Amess et al. (2007), and Mietzner, Schweizer, and Tyrell (2011).

One important reason for an active engagement by hedge funds and private equity managers might be that they have negotiated attractive performance-based compensation contracts with their investors. These agreements on average can carry an annual fixed management fee of about 2%, plus a performance fee of around 20% (also referred to as a “carry” in the private equity industry) (see, e.g., Hennessee, 2007 and Metrick and Yasuda, 2010).<sup>6</sup> These compensation structures align the interests of fund management with those of investors, and ensure that management is highly motivated to pursue investor interests.<sup>7</sup>

Furthermore, hedge fund and private equity funds are generally not affiliated with banks or insurance companies.<sup>8</sup> Financial institutions may tend to restrict fund management’s activism efforts out of a desire to preserve the future business potential of the firms in question. We thus conclude that conflicts of interest between an active engagement in a target company on the one hand and investment banking services on the other are much lower for these new institutional investors (see Kahan and Rock, 2007 and Davis and Kim, 2007).

Hedge funds and private equity funds also differ from each other in funding structure and in life cycles. Hedge funds are typically open ended, while private equity funds have a specific lifetime. During that lifetime, private equity managers are not affected by short-term share redemptions, which empower them to focus on longer investment horizons and a wider range of investment strategies. In addition, because private equity funds are focused solely on investing in certain companies, their managements’ skill sets typically encompass substantial financial expertise as well as strong business skills. These abilities are important for

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<sup>6</sup> Furthermore, almost every hedge fund employs a high watermark, meaning the manager does not earn the performance fee unless the fund value exceeds the previously achieved high value.

<sup>7</sup> Hedge fund managers are among the most highly compensated people in the world. Annual compensation of more than \$100 million is not uncommon. In 2005, the top twenty-five hedge fund managers each made more than \$130 million. In 2006, James Simons, the founder of Renaissance Technologies, earned \$1.7 billion. The carry is a high incentive for private equity managers and can be above \$100 million per year. In comparison, in 2006, Stephen A. Schwarzman, chairman, CEO, and cofounder of The Blackstone Group, a leading investment and advisory firm, earned about \$400 million.

<sup>8</sup> Like many large investment banks on Wall Street, Goldman Sachs for example offers several hedge funds (Opportunities Fund, Global Alpha, and the North American Equity Opportunities Fund). Similar conflicts of interest may arise in these cases for mutual funds, when, e.g., the M&A department offers investment banking services to a client and the hedge fund managers are executing activism strategies at the same time.

developing a deep knowledge of target companies' business models, which, in turn, is a prerequisite for improving company value (and reducing agency costs).

In contrast, hedge fund managers do not have the luxury of ignoring short-term performance. They may face significant capital withdrawals and a higher probability of losing their best employees if they report negative performance for several subsequent months and low or no new cash inflows (Getmansky, 2005). Therefore, to avoid capital reductions and to preserve liquidity, hedge fund managers must be more short-term oriented (Agarwal, Daniel, and Naik, 2009).

Hedge fund managers also face the threat of illiquidity if they acquire a large share position in a target company that they cannot sell within a short period. Hence, hedge funds prefer investments where they can achieve a fast turnaround. Their main goal is to identify undervalued firms where they may be able to establish a strong shareholder orientation in the short term. Such a strategy allows them to liquidate their holding positions quickly at low cost (or to sell the shares in a tender offer). However, this investment approach may not be as successful in stakeholder-oriented systems (such as in Germany) as it is in the U.S., where the systems are shareholder-oriented and where activism strategies originated.

### **3. Data**

We use three primary databases for our analysis. We obtain time series data from Thomson Financial DataStream,<sup>9</sup> i.e., daily closing prices and consolidated trading volumes for all firms in our sample and in the CDAX<sup>®</sup> index.<sup>10</sup> For accounting data, we use the Thomson Financial Worldscope database to obtain information from the fiscal year prior to the announcement. Finally, we use the Thomson Financial ownership database for information on sample firms' ownership structures on a quarterly basis starting in 1997. Specifically, we use the ownership

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<sup>9</sup> As a robustness check, we investigate whether our results are affected by the choice of data source. We find that the results remain quantitatively and qualitatively similar when we use market data directly from the German Stock Exchange (Deutsche Börse Group). Tables are available from the authors upon request.

<sup>10</sup> The CDAX<sup>®</sup> index is based on all German companies listed in the Prime and General Standard segments.

structure information from prior quarters and at the announcement date. The database reports investor name, type (i.e., classification), percent of total shares outstanding, and number of shares held by a reporting single investor. Obviously, our ownership database is determined by the reporting activities of the investors.

### **3.1. Hedge Fund Subsample**

Investors are required by the German Securities Trading Act (§§ 21 et sqq. German Securities and Trading Act) to disclose acquisitions of at least 5% of the voting rights of any German publicly traded company no later than nine days after the transaction. Following Becht and Böhmer (2003), we use the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)) to identify these shareholders from 2001 through 2007. This database provides information on direct holdings as well as on cumulative voting rights that investors may acquire due to, for example, joint control. Our data differ from recent U.S. studies because we include not only direct shareholder stakes, but also chains of direct stakes when one blockholder is in command of voting power and can exercise the votes of another blockholder (see Becht and Böhmer, 2003).

The BaFin database dates to 1995, and includes 3,860 disclosures through March 2007.<sup>11</sup> We exclude all filings of mutual funds, pension funds, and non-financial corporations. The remaining filings are matched with data from Eureka Hedge, a hedge fund data provider, in order to identify all companies that are targeted by hedge funds (we assume Eureka covers most active hedge funds in the German market).

We matched Eureka's information on 3,843 hedge funds with BaFin data to identify the percent of total shares outstanding held by hedge funds. Based on this information, we exclude all disclosures of non-hedge funds and non-publicly traded companies. We also searched Lexis Nexis and solicited the advice of industry participants on additions, deletions,

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<sup>11</sup> Although the BaFin database dates from 1995, we were unable to identify a hedge fund deal before 2001.



and transaction information. To avoid confounding events, we excluded all hedge fund disclosures made within three months of a prior announcement of a 5% shareholding in that company by any other investor. Furthermore, to avoid potential biases from illiquid stocks, we excluded all companies with no turnover on more than 30% of the 200 trading days prior to the announcement. Our remaining sample comprises sixty-seven hedge fund target firms listed in Germany. Industry classifications for each target company are provided in Table I.<sup>12</sup>

### **3.2. Private Equity Subsample**

We obtained transaction information for firms targeted by private equity investors for the November 1993-March 2007 period from the Thomson Financial Mergers and Acquisition database. To obtain a clean private equity subsample, we followed a two-step approach, as follows. We first searched the database for all publicly listed companies acquired by a private equity fund (private equity flag). We included deals transacted by special-purpose vehicles (SPVs) that are fully controlled by a private equity investor with an objective to acquire another company. To do this, we searched the deal synopsis for private equity funds that own/use special-purpose vehicles for deal transactions, or for terms like leveraged buyouts done via SPVs. Lastly, we included all acquisitions of subsidiaries of publicly listed companies because we assume that the market reaction to the announcement of selling a business unit to a private equity investor would also apply to the parent company.<sup>13</sup>

We next excluded all withdrawn and incomplete transactions. Figure 1 plots the historical distribution of private equity and hedge fund events in our sample.<sup>14</sup>

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<sup>12</sup> Note that our private equity subsample contains more manufacturing firms, but hedge fund activism is clustered in the service industry. The difference might be enough to cause a sample bias, and could drive our valuation effects of hedge fund and private equity block purchases. To counter this potential sample bias, we construct two subsamples for the different acquirers (manufacturing versus non-manufacturing for private equity transactions, and services versus non-services for hedge fund targets). We then compare their mean and median abnormal returns. We detect no statistically significantly different market reactions to either private equity or hedge fund targets in different industries. Thus, we believe our results are not affected by an industry sample bias. Tables are available from the authors upon request. We thank the referee for this important point.

<sup>13</sup> For robustness, we controlled for whether the results of the event study were affected by these events. We found that our results remained stable. Tables are available from the authors upon request.

<sup>14</sup> The industry classification for private equity targets is given in Table I.

We validated our sample by matching it with the BaFin data, and by conducting a search on Lexis Nexis. We again solicited industry participants for advice on additions, deletions, and transaction information. Our final private equity sample consists of 159 target firms. Industry classifications are in Table I.

#### 4. Methodology

Market reactions to announcements of acquisitions of at least 5% of a company's voting rights by hedge funds or private equity investors can provide an estimate of an upper bound for value creation. This is due to the agency costs that the market expects to (potentially) be eliminated by the new blockholders. The reaction is considered an upper bound because the positive market response could be the result of corporate governance improvements in the target firms and/or positive news about the future of the company (information signaling) (see, e.g., Mietzner, Schweizer, and Tyrell, 2011). Therefore, we apply standard event study methodology using pre-event data over a 200-day period from  $t_{i,-220}$  to  $t_{i,-20}$  (see Brown and Warner (1985) or Corrado (2011) for an introduction to event study methodology). The basic idea of an event study is to measure the valuation effects of a corporate event, such as an engagement of a private equity investor, by examining the abnormal stock performance around the announcement of the event. Abnormal returns ( $AR_{i,t}$ ) are calculated as the difference between the actual stock return and the expected or "normal" return based on the market model:  $AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$ , where  $R_{it}$  is the return to firm  $i$  at time  $t$  and  $R_{mt}$  is the market (CDAX<sup>®</sup>) return at time  $t$ .<sup>15</sup> These abnormal returns are aggregated across the event period to form cumulative abnormal returns (CARs). Next, we draw statistical inferences for the mean and median event window CARs using a standard t-test statistic and the Wilcoxon rank sum z-score (figure 2 and 3 display the average CARs over time).

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<sup>15</sup> Low trading volume might influence the estimation of the systematic risk factor  $\beta_i$ . Therefore, we re-estimate the abnormal returns for our time intervals using a mean-adjusted returns model as proposed by Brown and Warner (1985). Our results remain robust. We also calculate cumulative abnormal trading volumes for the different time intervals using the mean-adjusted event study approach described above to control for volume-induced stock price increases.

Following Böhmer, Masumeci, and Poulsen (1991), we also apply the test to capture possible event-induced increases in variance. To eliminate the skewness bias, we use the skewness-adjusted t-statistic, as recommended by Lyon, Barber and Tsai (1999).

To determine whether the capital markets distinguish between large purchases of voting rights by hedge funds or by private equity investors, we analyze the differences in means and medians of event window abnormal announcement returns. However, we need to overcome the problem of disclosure requirements. Investors must disclose acquisitions no later than nine days after the transaction. Because we identify announcement days within our hedge fund sample using BaFin's information, the pattern of announcement returns might be biased by a lagged disclosure. The differences in announcement returns between the two samples may lead to incorrect inferences for shorter event windows. To avoid this problem, we base the subsequent cross-sectional regression on a [-10:10] event window.

To analyze the investor targets in more detail, we first attempt to determine the likelihood that a target will be acquired by either a private equity investor or a hedge fund. We calculate the conditional probability by estimating a Probit model using observable firm characteristics, with a dummy variable equal to 0 if a firm is more likely to become a hedge fund target, and 1 for a private equity target.

Our second step is to calculate the CARs and estimate their sensitivity to transaction, ownership, and firm characteristics. We estimate the t-statistics of our cross-sectional regressions using White's (1980) heteroskedasticity-consistent standard errors.<sup>16</sup>

To determine the long-term impact of ownership by private equity investors or hedge funds, we calculate 150-, 200-, 250-, and 300-day BHARs to measure the performance of our

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<sup>16</sup> In unreported tables, we use variance decomposition according to Belsley, Kuh, and Welsch (1980) to detect collinearity problems. We found no multicollinearity. In addition, the maximum variance inflation factors (VIF) are reported in our cross-sectional regression tables.

target firms. We estimate the BHARs using the daily closing prices relative to the CDAX<sup>®</sup>,<sup>17</sup> and we evaluate the statistical significance of the mean and median portfolio returns of industry rivals. We use a standard t-statistic and the Wilcoxon rank sum z-score.

## **5. Empirical Results**

### **5.1. Differences in Investment Behaviour and Target Companies**

Because hedge fund and private equity managers may have different investment preferences, target companies may also have different characteristics. To analyze these differences and investigate investor behavior (see Table II), we apply a Probit model to predict whether a firm will become a private equity target (dependent variable of 1), or a hedge fund target (dependent variable of 0) (see Table III). See the Appendix for clear definitions of all variables used in both the univariate (Table II) and cross-sectional analyses (Tables III and V).

The target characteristics of interest are firm size, interest expenses on debt divided by sales, and book-to-market ratio. We find that hedge funds prefer smaller targets (row 8), with higher growth valuations (row 6) and higher interest expenses compared to sales (row 7). This is not surprising, as activist hedge fund managers generally have fewer assets under management than similar private equity funds. The higher book-to-market multiples might be due to smaller companies having higher average valuations than more mature companies.

The ratio of lower interest expenses to sales can be explained by the fact that private equity companies typically prefer targets that are not burdened with high interest expenses. This gives them more latitude to change business plans and capital structure. However, the fact that hedge funds prefer targets with high book-to-market values and higher interest expenses on

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<sup>17</sup> Usually, we would assign a matched firm to each target company, as per Lyon, Barber and Tsai (1999). However, in contrast to the U.S., we believe the small number of publicly listed companies in Germany and the documented rival effects could bias the results (Mietzner, Schweizer, and Tyrell, 2011).

debt divided by sales is striking and contradicts one of the most common tenets of investing: the negative relationship between book-to-market values and leverage (see Tirole, 2006).

Note that most of our agency proxies (leverage, free cash flow, ROA, and earnings per share) cannot easily distinguish between hedge fund and private equity targets. This suggests that both types have a similar potential to reduce agency costs. With regard to governance structure, however, the Probit model shows that hedge fund managers favor targets that already have shareholders in the quarter of the acquisition (row 9). Furthermore, the probability that a company will be targeted by a hedge fund is higher if another hedge fund is already a shareholder prior to the acquisition (row 10), and if the largest shareholder is a hedge fund (row 13).

It is also important to note that private equity managers acquire, on average, larger stakes in their target companies than their hedge fund colleagues (row 1). This may be because hedge funds, with smaller average fund sizes, typically need other blockholders to support their strategic plans, a practice referred to as “syndication.” Private equity investors may also be more interested in delisting a target company.

In summary, when hedge fund and private equity managers invest in target companies, we believe they have a similar potential to reduce agency costs. However, the targets differ in size, relative interest rate payments, and investment behavior. Hedge fund managers buy smaller stakes and seek the presence of other blockholders, preferably other hedge funds. But the presence of other blockholders may reduce the agency cost potential for further value creation. Thus, hedge fund managers may be less able to affect company performance. Furthermore, the seeming dependence of hedge fund managers on the voting rights of other blockholders may hinder them from working as efficiently in the German corporate governance system as they do in the U.S.

## 5.2. Market Reaction to Purchases of Large Blocks of Voting Rights

This section examines market reactions to announcements that hedge funds or private equity investors have reached the level of becoming active blockholders. We hypothesize that these announcements will be associated with positive abnormal returns because of the opportunity to reduce agency costs and/or enhance the business strategy of the target company.

We calculate market- and risk-adjusted returns for different event windows, and define the disclosure date as day 0. Table IV gives estimates of the wealth effects for the full sample of 226 hedge fund and private equity targets (Panel I), the sample of 159 private equity targets (Panel II), and the 67 hedge fund targets (Panel III). Figure 2 and 3 illustrate the market reactions during the [-30;+30] window for different subsamples.

The results in Table IV strongly support our hypothesis of a statistically significant positive market reaction to purchases of at least 5% of voting rights. For all chosen event windows, Panel I shows the entire sample of CARs is roughly 4.00%. The forty-one-day CAR [-20;+20] is 4.47%, which is significantly different from 0.

Panel II shows a CAR of 3.55% for private equity targets. Note that the estimate of the wealth effect for hedge fund targets in Panel III is 6.24% for the [-20;+20] window. The results in Panel III are statistically significant, robust, and in line with those of Brav et al. (2008), Clifford (2008), Klein and Zur (2009), and Achleitner, Betzer, and Gider (2010).

Comparing Panel III's hedge fund findings with the abnormal returns in Panel II, we find the market reaction for larger event windows is more distinct in absolute terms. This suggests the market perceives purchases of large blocks of voting rights by hedge funds as more value-enhancing than those by private equity investors.<sup>18</sup>

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<sup>18</sup> Note that we cannot compare shorter event windows because of the distortion from the acquisition disclosures of at least 5% of the voting rights in publicly listed companies within the BaFin database. As we noted earlier, funds are obligated to report block acquisitions no later than nine days after they have reached or exceeded a 5% level (in January 2007, the minimum threshold was lowered to 3%).

However, part of this difference can be explained by a slight run-up by private equity targets prior to the event. In addition, the tests for differences do not find statistical differences for the hedge fund and private equity CARs. This result is not surprising, as we have noted that both sets of managers have similar skill sets. Therefore, there is no a priori reason why capital markets should react differently on the announcement day.

### **5.3. Explanations for Investment Behavior and the Sources of Value Creation**

We apply several cross-sectional regression models in order to explore the short-term differences in valuation effects across the target companies (see Table ). The first model (the Control model) is designed to control for several aspects that could distort the results of the subsequent models. Models I and II are explanatory in nature, and aim to determine whether agency cost proxies, corporate governance variables, or firm characteristics explain the short-term market reactions. The Agency model addresses agency-related questions.

#### **5.3.1. Control Model**

The control variables are as follows:

1. *Liquidity*. The Amihud (2002) liquidity measure controls for illiquidity in outstanding shares over the 200-day period from  $t_{i,-220}$  to  $t_{i,-20}$  prior to the announcement. If the share price increase is the result of buy-side pressure for illiquid stocks, the coefficient on the variable should be positive.
2. *Run-Ups – Drawdowns*. After periods of run-ups or drawdowns, the market tends to move in the opposite direction, a so-called technical reaction. Therefore, we would expect a negative sign on the coefficient.
3. *Beta*. The market reaction could be a risk premium captured by the CAPM's beta coefficient (systematic risk). Not all targets have the same beta parameter, so we would expect a positive sign on the coefficient.

4. *Hedge Fund Herding*. In the previous section, we observed that hedge fund managers tend to follow other hedge fund managers when building activist strategies. Using a dummy variable equal to 1 for follow-on investments, we control for whether these managers have statistically different announcement effects three months after the initial investment.

5. *Affiliated Company*. Private equity managers acquire business units from publicly listed companies. The announcements of these acquisitions have an impact on the share price of the listed company. We control with a dummy variable for whether the acquisition of an affiliated company has statistically different announcement effects.

Table reports the results of the control model, which shows no statistically significant coefficient at either the 1% or 5% levels. Only the Amihud liquidity measure coefficient is significant at the 10% level within the hedge fund sample. This implies that the CARs in the hedge fund panel might be influenced by buy-side pressure in illiquid stocks.

### **5.3.2. Firm Characteristics, Ownership Structure, and the Impact of Agency Cost Proxies**

We use the following explanatory variables to explore the short-term differences in valuation effects across the target companies:

1. *Leverage*. Leverage reduces the agency costs that arise from the separation of ownership and control. Our proxy for leverage is the ratio of debt-to-total assets. Higher leverage discourages managers from wasting corporate resources and therefore reduces agency costs (see, for example, Jensen, 1986). Thus, we expect a negative coefficient.

2. *Free Cash Flow*. Agency costs are higher when managers have large amounts of cash at their disposal. This suggests the agency problem is more pronounced for



firms with high operational performance. Our proxies for the disposability of free cash flows are growth in equity from two years prior to the announcement to the subsequent year, the cash flow return on total assets, and the cash earnings return on equity. The capital markets should consider a high level of cash flow an opportunity to increase shareholder value if active investors achieve their goal of reducing agency conflicts. Therefore, we expect a positive coefficient.<sup>19</sup>

3. *Trading Volume*. To be considered an event, there must be at least a 5% acquisition of voting rights by active investors. The acquisition could cause an increase in trading volume of the stock, and may be accompanied by abnormal trading volume. Our corresponding proxy is the abnormal trading volume from ten days prior to the announcement until ten days afterward, calculated using standard event study methodology. We expect a positive sign if the CARs are related to buy-side pressure.

4. *Valuation Level*. The market-to-book ratio measures whether growth opportunities are reflected in the current share price. The higher the ratio, the more growth opportunities are currently reflected. We conjecture that in such cases it will be more difficult to enhance value due to activism. Thus, we expect a negative coefficient.

5. *Firm Size*. Helwege, Pirinsky, and Stulz (2007) assume a negative relationship between firm size and the level of information asymmetry. They argue that larger firms are covered by analysts and monitored by institutional investors and regulators more frequently, which reduces information asymmetries. Furthermore, the aggregate demand for analyst services is likely to be an increasing function of firm size (see, for example, Bhushan, 1989). The rationale is that an investor is likely to find a piece of private information about a larger firm more valuable than the same

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<sup>19</sup> In robustness checks, we also perform a regression analysis using cash over year-end market capitalization as an additional proxy for free cash flow on the observed wealth effects. However, the number of observations in our cross-sectional analysis becomes too small for a satisfactory analysis. Tables are available from the authors upon request.

piece of information about a smaller firm. This is because the same trading amount in a bigger firm does not arouse suspicion about insider trading as easily as it would in a smaller firm, and transaction costs might be lower. Therefore, firm size is expected to correlate positively with the number of analysts gathering private information and the number of investors exploiting possible trading opportunities. This implies that increasing firm size will have a negative correlation with opportunities for increased shareholder wealth by new institutional investors because of more private information. We use the logarithm of a company's market capitalization at the announcement day as the proxy for firm size. Thus, we expect a negative coefficient.

6. *Ownership Structure.* We use the number of blockholders ( $\#Blockholder(t-1)$ ) to control for a company's ownership structure. Because a high number of blockholders does not necessarily lead to a reduction in agency costs, however, we need a measure for the potential monitoring activities of large blockholders. To determine whether the capital markets distinguish between blockholders, we control for the number of private equity funds already invested in the target ( $\#PE$ ), and for whether the largest blockholder in the prior quarter or in the quarter of the acquisition is a hedge fund (largest HF) or an investment advisor (largest investment advisor). A concentrated ownership structure can alleviate agency problems, so we expect lower market reactions.

As can be seen from Model I, Model II, and the Agency Model for the private equity subsample in Table , firms with higher return on asset ratios and more free cash flow have higher positive announcement returns. This is as expected, according to Jensen's (1986) free cash flow hypothesis that agency conflicts apparently show up as free cash flow problems.

A similar picture emerges for ownership structure proxies. The number of private equity investors and the identity of the largest blockholder indicate that short-term market returns are

lower if an active investor such as a hedge fund or a private equity manager is already invested in the company. The rationale is that the presence of these investors would already serve to address potential managerial inefficiencies, thus minimizing the potential for agency cost reduction by the additional investor.

Furthermore, we note that the number of shareholders with a sizable block of voting rights is not related to short-term stock performance. These findings are also consistent with Cronqvist and Fahlenbrach's (2009) results, who show that investors differ in their capabilities and incentives to become active and to influence the companies in question.

The size of a target company is negatively related to the announcement returns. As noted above, the level of information asymmetry and the opportunity to benefit from private information decreases with size, because larger firms are covered more frequently. Hence, the incremental benefits from additional monitoring by the new institutional blockholder are lower for larger firms.

Table V shows that a high market valuation of the target company reduces the announcement return. The market-to-book value measures whether growth opportunities are already reflected in the current share price; a higher ratio implies they are. The existence of more growth opportunities suggests a better competitive position in the industry in the future and less restructuring requirements.

Private equity investors often seek to acquire a majority stake in order to enhance the target firm's operating and financial policies. They tend to acquire larger blocks of voting rights. Thus, the market may have already reacted to increased buy-side pressure, which is also indicated by the positive coefficient on abnormal trading volume.

For hedge fund activism, the picture is different. From Table V, we can infer that the liquidity (free cash flow) and profitability (ROA, equity growth) of the target firm is negatively related to the market reaction. Although these findings pose a challenge to our hypotheses, we can interpret them as a result of the fact that hedge funds often intend to

extract cash from their target firms (as noted by Mietzner, Schweizer, and Tyrell (2011) for Germany, and Klein and Zur (2009) for the U.S.). Such a cash depletion can result in long-term underperformance for the target firms as compared to their industry rivals.

Regarding the effect of a hedge fund target firm's ownership structure, we find a positive relationship between the existence of a private equity investor one quarter prior to the announcement and the market reaction. This may be attributable to the fact that private equity and hedge fund managers have similar but not equal interests, and complement each other in the value creation process (syndication). However, in terms of reducing agency problems, it is questionable whether a subsequent hedge fund engagement is value-enhancing. Instead, we find that hedge fund engagements in targets where other hedge funds are the largest blockholders cause lower market reactions, because the investor may have already extracted the cash holdings from the company.

In summary, the results for our private equity subsample suggest a fairly long-term strategy for dissolving agency conflicts, but we find different motives for hedge fund engagements. This finding should also be reflected in a long-term outperformance of private equity targets over hedge fund targets, as only private equity investors seem to improve operating profits during the engagement period.

#### **5.4. Time Series Patterns – Should (Private) Investors Follow “Smart Money”?**

Table VI shows long-term buy-and-hold abnormal returns (BHAR) for our samples. We find that the median BHAR relative to our benchmark index is negative and statistically significant for the entire sample of hedge fund and private equity targets.<sup>20</sup> Considering the subsamples, we find a -2.47% BHAR for the 250-day period for the private equity subsample, which is remarkably high compared to the hedge fund subsample (-21.46%).<sup>21</sup> In contrast,

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<sup>20</sup> Means may be influenced by single observations, i.e., outliers. Therefore, we pay more attention to medians.

<sup>21</sup> The results remain stable when we control for time effects. However, the BHARs are less negative for the 2005-2007 period.

Brav et al. (2008), Klein and Zur (2009), and Clifford (2008) report positive abnormal returns for the year following block purchases by hedge funds.

It is thus tempting to conclude that the observed means and medians in the hedge fund and private equity subsamples are a mixture of different investment strategies comprised of, for example, an agency cost reduction policy. Consequently, we would expect investors targeting firms with a high potential to reduce agency costs to perform significantly better over the long term than those interested more in short-term trading-induced profits. Although the difference in long-term performance is statistically significantly different only for the 250-day BHARs, this finding supports our hypothesis. Over the long term, private equity targets perform better than hedge fund targets, as their return drifts are more negative. However, the BHARs for private equity targets are negative, too, and this finding needs clarification.

Negative long-term market performance of target firms also affects the new investor's entire portfolio performance. For private equity targets, however, the negative 250-day BHARs can be explained by the beginning of the J-curve. And, because the new investors have a long-term investment horizon, they are not necessarily as concerned about negative market performance in the year subsequent to their engagement.<sup>22</sup>

Hedge funds, in contrast, must avoid negative performance because it can lead to capital withdrawals. However, hedge funds use derivatives extensively to increase returns (Wright et al., 2007). Thus, if they have a net short position, they may not be as concerned about distinctly negative returns to their portfolio companies. However, despite an extensive Lexis Nexis search, we could not find any evidence to quantify the use of derivatives or shorting techniques. Thus, we provide an alternative explanation.

Franks and Mayer (1994) distinguish between two corporate governance systems: outsider-controlled, and insider-controlled. An outsider-controlled system is characterized by a

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<sup>22</sup> Note that two J-curves exist. The fund's J-curve has already been discussed. The target's J-curve results from underperformance in the first years after the acquisition that may result from, e.g., restructuring. The subsequent outperformance is based primarily on increased efficiency from the restructuring.

dispersed ownership, with only minor stakes of voting rights held by individuals. An insider-controlled system is characterized by a concentrated ownership structure (Mayer, 2002). German corporations, for example, normally have a high concentration of voting power by one blockholder, who often controls more than 25% (Becht and Böhmer, 2003).<sup>23</sup>

Additionally, and in contrast to an Anglo-Saxon outsider-controlled system that relies on market mechanisms, insider-controlled systems focus on the interests of different groups of stakeholders, i.e., blockholders, employees, union representatives, or banks (see Schmidt, 2004 and Hackethal, Schmidt, and Tyrell, 2006).<sup>24</sup> The interests of these different stakeholders are exerted via the advisory board, which can, for example, hire or fire executives. However, the composition of the advisory board is critical, because it determines the potential influence that individual stakeholders will have on management (Schmidt, 2004).<sup>25</sup>

As we have noted, hedge funds tend to acquire smaller stakes than private equity investors. But hedge funds must align their interests with the advisory board, and they need to convince other shareholders to vote in their favor. Therefore, a sustainable change to the company can only be effective when hedge fund managers have a credible control threat, which requires a longer time horizon to be implemented in Germany than it would in the U.S. This makes it more complex for hedge fund managers using Anglo-Saxon investment strategies to reduce agency costs within a target company.

It seems reasonable that a negative benchmark-adjusted performance would be the result of an (initially) expected but (eventually) unrealized reduction of agency costs. Furthermore,

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<sup>23</sup> The major shareholders of German firms are other corporations, insurance companies, and individuals, not strictly profit-oriented banks (Hackethal, Schmidt, and Tyrell, 2006). On 14 July 2000, the capital gains tax on sales of large stakes held by corporations was abolished, making it attractive for corporations to sell their blocks. Ownership concentration dispersed, which should favor the business models of active investors. However, and regardless of other blockholders, active shareholders are required to align their interests with those of the advisory board.

<sup>24</sup> The focus on stakeholders is not only in line with German corporate law. Indeed, a focus on single groups that have an interest in a company is against the law (Schmidt, 2004). For more on the role of employees, union representatives, or banks, see Schmidt (2004) and the references therein.

<sup>25</sup> Note that small shareholders are not part of what Schmidt (2004) calls the “governing coalition.”

shareholders may be disappointed if there is speculation about a possible takeover and the related premium that do not ultimately occur (see Greenwood and Schor (2009) for further details).

This explanation is in line with the findings of Gompers, Ishii, and Metrick (2003), who analyze the relationship between corporate performance and shareholder rights. They find that firms with a high level of shareholder rights outperform those with a weak level. This discrepancy is only partially reflected in share prices at the beginning of the sample period. However, by 1999, this disproportion in market valuation has been adjusted (Gompers, Ishii, and Metrick, 2003).

Alternatively, Loughran and Ritter (1997) suggest that investor overoptimism about persistent positive past returns may explain deteriorating stock returns after a firm's SEO. The theory is that investors are disappointed if positive pre-issue performance does not continue. This corresponds with the perception that the capital markets do not properly assess the ramifications of more short-term profit-oriented investors, and may misinterpret hedge fund investment strategies.

Our evidence supports the idea that hedge funds are not able to or do not intend to reduce agency costs when they invest in publicly listed companies. We find the opposite for private equity investors.

## **6. Conclusion**

This paper analyzes market reactions triggered by announcements that hedge funds and private equity investors intend to purchase large blocks of voting rights in target companies. We argue that changes in shareholder wealth are related to the incentives and capabilities of being an active blockholder who can successfully reduce agency problems.

Our evidence of substantially positive abnormal returns triggered by an announcement of a hedge fund or a private equity fund acquiring at least 5% of a company's voting rights is

consistent with the market's perception that both investors can reduce agency costs, in principle, and enhance shareholder value. Furthermore, by distinguishing between companies targeted by hedge funds and private equity funds, we show that hedge funds tend to target smaller companies and to acquire smaller stakes. Hedge funds also seek targets with more blockholders in the quarter before the acquisition, and prefer firms whose largest blockholders are already hedge funds.

The major finding of our analysis is that in Germany, hedge funds, unlike private equity funds, are not able to enhance shareholder value by reducing agency costs. This finding is contrary to previous studies from the U.S. (e.g., Brav et al., 2008, Clifford, 2008, and Klein and Zur, 2009). Within our hedge fund sample, we find no relationships between market reactions and agency cost proxies. Instead, we find that only abnormal trading volume positively affects the announcement returns. This result is consistent with the opinion that at least part of the announcement returns in our hedge fund sample are the result of buy-side pressure.

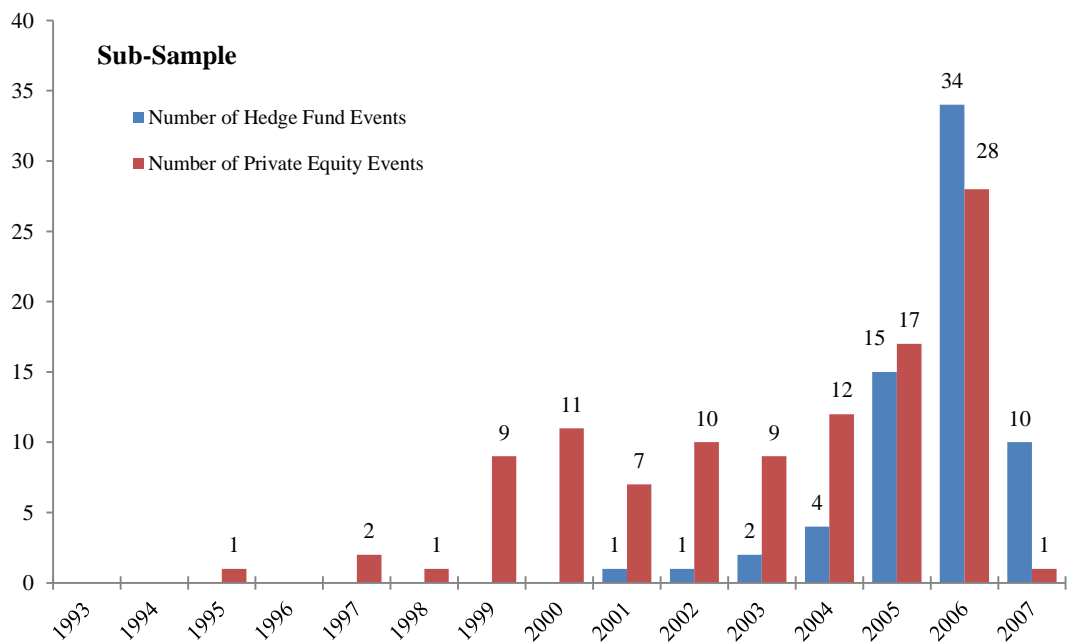
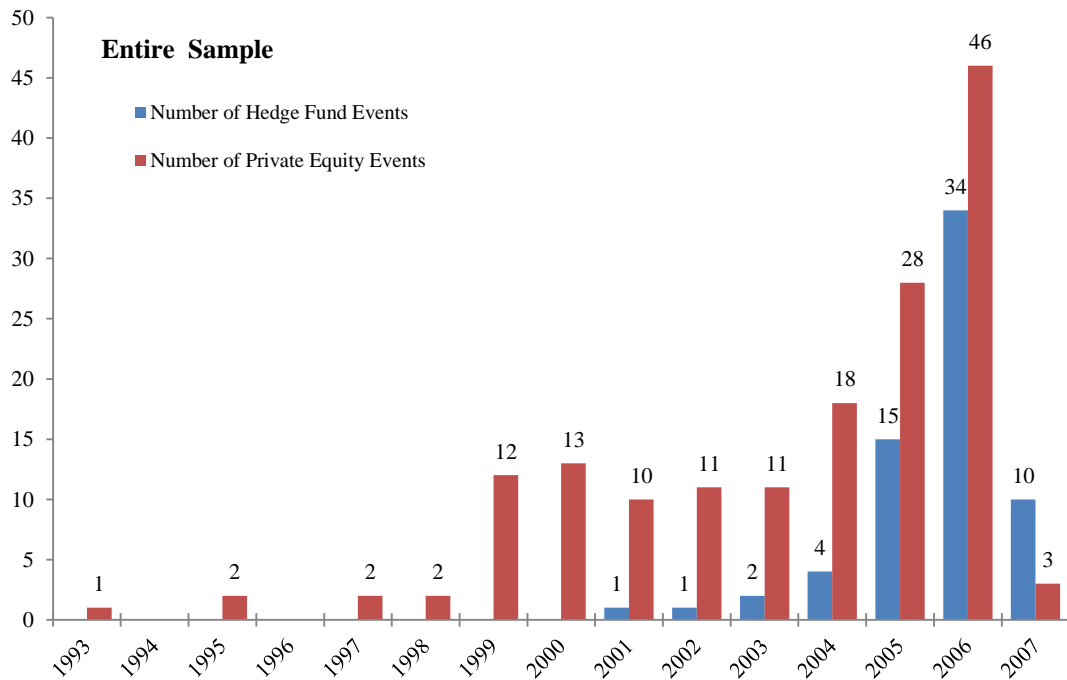
Furthermore, examining ownership characteristics reveals they provide only a poor explanation for the market reactions within our hedge fund sample. However, they are important for our sample of private equity targets. Interestingly, our findings support the market perception that a private equity fund is less capable of reducing agency costs when the target already has active blockholders, because there are already controlling shareholders present.

In the long-term we find statistically significant negative median BHARs for both samples at the end of the 250-day period after the event. However, the rather small negative BHARs for companies targeted by private equity funds may indicate the beginning of a J-curve. Furthermore, market participants do not seem to believe that hedge fund activism can create wealth effects as much as private equity engagements can, because we find the negative long-term performance of hedge fund targets is more distinct. This may indicate that the capital



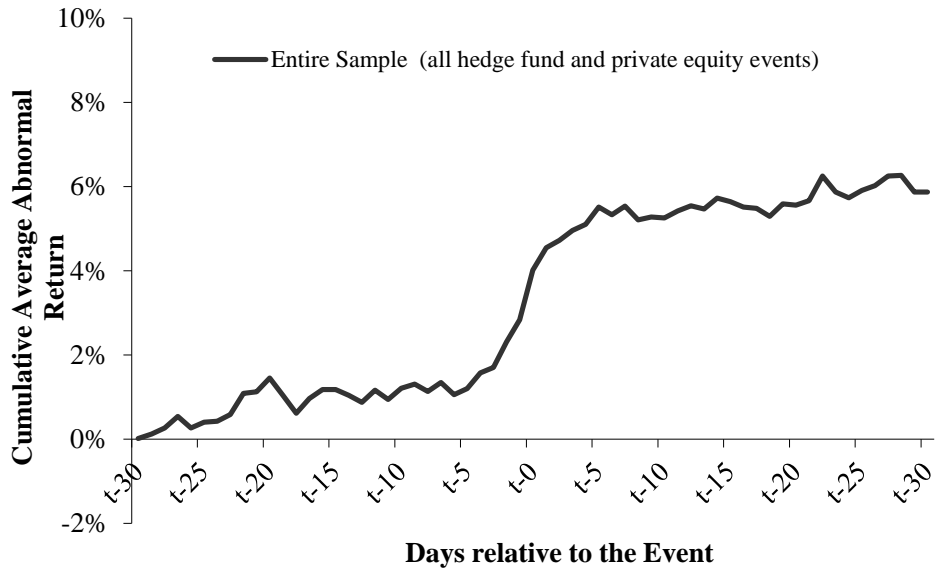
markets misinterpret the ability of hedge fund managers to operate efficiently within the German corporate governance system with U.S.-based proven strategies. This topic seems to be a promising avenue for further research to deepen the understanding about how different corporate governance systems affect the abilities of active monitors. We also do not find that hedge fund targets are likely to be the subject of takeovers. Thus, investors would not realize a takeover premium to the stock price at the announcement.

In summary, we conclude that a negative benchmark-adjusted performance for hedge fund target firms can be a result of expected but unrealized reductions in agency costs, and/or in unrealized takeover premiums.



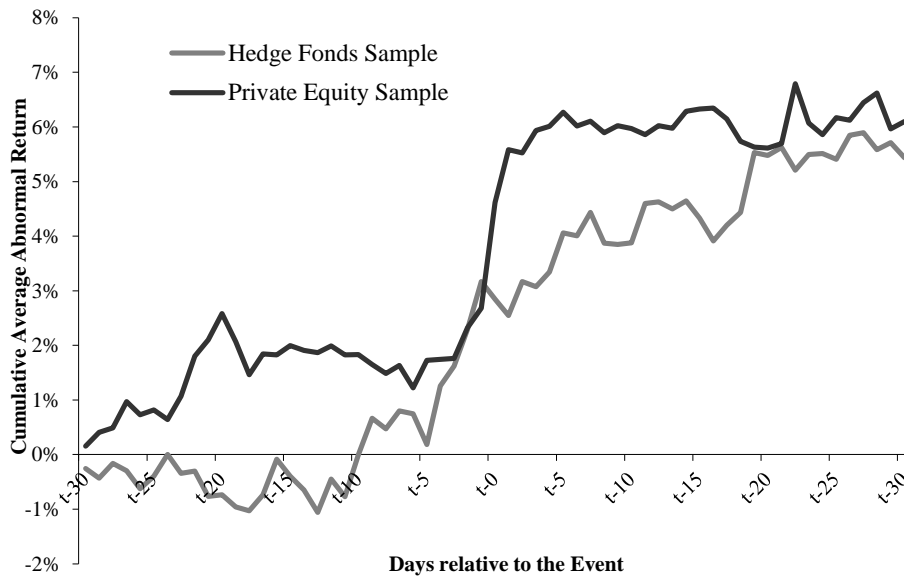
**Figure 1: Distribution of hedge fund and private equity events from 1993 through 2007**

The sample covers all 226 events, divided into 159 private equity and 67 hedge fund events. The subsample is reduced for all private equity events related to affiliated companies (51), and is then further divided into 108 private equity and 67 hedge fund events.



**Figure 2: Cumulative average abnormal returns around the disclosure of at least a 5% voting rights acquisition**

The graph illustrates the cumulative average abnormal returns from Day -30 through Day +30 for the entire sample of private equity and hedge fund targets.



**Figure 3: Cumulative average abnormal returns around the disclosure of at least a 5% voting rights acquisition for the subsamples**

The graph illustrates the cumulative average abnormal returns from Day -30 through Day +30 for the private equity and hedge fund subsamples.

**Table I**  
**Industry Classification**

This table summarizes the industries of the hedge fund and private equity target firms. Each firm is classified into one of the ten SIC divisions according to its primary four-digit SIC code.

	Private Equity Transactions		Hedge Fund Transactions	
	No. of Transactions	Percent of Panel	No. of Transactions	Percent of Panel
Agriculture, Forestry, and Fishing	0	0.00%	1	1.35%
Construction	3	1.89%	0	0.00%
Manufacturing	84	52.83%	23	31.08%
Transportation, Communications, Electric, Gas, and Sanitary Services	13	8.18%	4	5.41%
Wholesale Trade	5	3.14%	1	1.35%
Retail Trade	1	0.63%	3	4.05%
Finance, Insurance, and Real Estate	27	16.98%	12	16.22%
Services	26	16.35%	23	31.08%
<b>Total</b>	<b>159</b>	<b>100.00%</b>	<b>67</b>	<b>100.00%</b>

**Table II**  
**Descriptive Statistics for Hedge Fund and Private Equity Target Characteristics and Tests for Differences**

Descriptive statistics are without affiliated companies.

- 1) Liquidity: The Amihud (2002) illiquidity measure (Liquidity) is defined as the daily ratio of absolute stock returns to its euro volume, averaged one calendar year prior to the announcement day.
- 2) Trading Volume: Abnormal daily trading volume in thousands EUR from the period ten days prior to ten days after the event.
- 3) % Acquired: Number of common shares acquired in the transaction plus any shares previously owned by the acquirer, divided by the total number of shares outstanding.
- 4) Dividend Payout: Common Dividends (Cash)/(Net Income before Preferred Dividends - Preferred Dividend Requirement) \* 100.
- 5) Leverage: Total Debt Percentage Total Assets = (Short-Term Debt and Current Portion of Long-Term Debt + Long-Term Debt)/Total Assets \* 100.
- 6) ROA: Return on Assets = (Net Income before Preferred Dividends + ((Interest Expense on Debt - Interest Capitalized) \* (1 - Tax Rate)))/Last Year's Total Assets \* 100.
- 7) Equity Growth: Equity One-Year Growth = Current Year's Common Shareholder Equity/Last Year's Common Equity - 1) \* 100.
- 8) EPS: Earnings per share represent the earnings for the twelve months ending the fiscal year of the company.
- 9) Market-to-book ratio: Market-to-Book Value = Market Price-Year-End/Book Value per Share.
- 10) Beta: Beta coefficient calculated over 200 trading days before the block acquisition (estimation period of the event study analysis).

	Liquidity	Trading Volume	% Acquired	Dividend Payout	Leverage	Free Cash Flow	ROA	Equity Growth	Earnings per Share	Market-to-Book Ratio	Beta
Private Equity Sample											
Mean	0.002	8.207	0.450	16.565	26.829	32.570	-0.217	49.255	-1.250	3.799	0.489
Median	0.000	0.000	0.290	0.000	21.577	31.158	3.408	5.757	0.318	1.585	0.364
Hedge Fund Sample											
Mean	0.006	16.907	0.116	11.354	27.119	28.906	-3.970	48.296	-1.076	4.335	0.480
Median	0.001	7.784	0.080	0.000	16.149	15.488	3.250	5.778	0.163	2.300	0.468
Mean t-Test											
t-Value	0.968	1.722	-6.577***	-1.148	0.047	-0.294	-1.061	-0.033	0.097	0.359	0.116
Rank Sum Test											
t-Value	-1.885	1.214	-4.605***	-0.822	-1.043	-1.955	-1.095	-0.286	-0.145	-2.163***	0.753

\*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

*(continued)*

**Table II—Continued**

- 11) Assets: Logarithm of total assets in millions of Euros.  
 12) Cash: Logarithm of cash, which represents money available for use in the normal operations of the company.  
 13) Firm Size: We use the logarithm of the year-end market capitalization in millions of euros as our proxy for firm size.  
 14) Syndication: A hedge fund follow-on dummy variable equal to 1 if a second hedge fund invested in the same target three months to one year after the first.  
 15) Largest HF: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a hedge fund.  
 16) #Blockholder: Number of blockholders at the time of acquisition.  
 17) #Blockholder(t-1): Number of blockholders one quarter before the acquisition.  
 18) # PE: Number of private equity funds one quarter of the year before the acquisition.  
 19) #HF: Number of hedge funds one quarter before the acquisition.  
 20) Largest Holding Company: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a holding company.  
 21) Largest Company: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a company.  
 22) Largest Investment Advisor: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is an investment advisor.

	Assets	Cash	Firm Size	Syndication	Largest HF	#Blockholder	#Blockholder (t-1)	# PE	#HF	Largest Holding Company	Largest Company	Largest Investment Advisor
Private Equity Sample												
Mean	4.783	2.612	4.458	0.000	0.030	2.030	1.84615	0.231	0.242	0.000	0.254	0.239
Median	4.836	2.301	4.074	0.000	0.000	2.000	1.00000	0.000	0.000	0.000	0.000	0.000
Hedge Fund Sample												
Mean	5.166	3.286	4.827	0.358	0.288	3.197	2.78788	0.152	1.212	0.061	0.288	0.182
Median	5.018	3.309	4.660	0.000	0.000	3.000	3.00000	0.000	1.000	0.000	0.000	0.000
Mean t-Test												
t-Value	1.024	1.594	1.142	7.719***	4.329***	4.536***	3.393***	-1.151	5.066***	2.063***	0.440	-0.802
Rank Sum Test												
t-Value	0.696	2.362** *	-1.296	6.674***	4.061***	4.660***	-3.583***	1.146	6.362***	2.031***	0.439	-0.800

\*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table III****Probit Model Predicting Differentiation in Private Equity and Hedge Fund Targets**

The sample covers all target firms and excludes affiliated companies. We run the Probit regressions so that the dependent variable equals 0 if the company is targeted by a hedge fund, and 1 if targeted by a private equity fund. The target characteristics are:

- 1) % Acquired: Number of common shares acquired in the transaction plus any shares previously owned by the acquirer, divided by the total number of shares outstanding.
- 2) Leverage: Total Debt Percentage Total Assets = (Short-Term Debt and Current Portion of Long-Term Debt + Long-Term Debt)/Total Assets \* 100.
- 3) Free Cash Flow: Cash Earnings Return on Equity = Funds from Operations/Last Year's Common Equity \* 100.
- 4) ROA: Return on Assets = (Net Income before Preferred Dividends + ((Interest Expense on Debt - Interest Capitalized) \* (1 - Tax Rate)))/Last Year's Total Assets \* 100.
- 5) EPS: Earnings per share represent the earnings for the twelve months ending the fiscal year of the company.
- 6) Market-to-Book Ratio: Market-to-Book Value = Market Price-Year-End/Book Value per Share.
- 7) Interest Expenses: Interest expenses on debt divided by sales.
- 8) Firm Size: We use the logarithm of the year-end market capitalization in millions of euros as our proxy for firm size.
- 9) #Blockholder(t-1): Number of blockholders one quarter before the acquisition.
- 10) #HF: Number of hedge funds one quarter before the acquisition date.
- 11) Largest Investment Advisor: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is an investment advisor.
- 12) Largest Company: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a company.
- 13) Largest HF: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a hedge fund.
- 14) Largest Company: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a company.

Target Characteristics	Coefficient	t-Value
% Acquired	3.343***	3.34
Leverage	0.014	1.09
Free Cash Flow	-0.004	-1.26
ROA	0.005	0.34
Earnings per Share	0.135	1.33
Market-to-Book Ratio	-0.161*	-1.96
Interest Expenses	-15.943**	-2.04
Firm Size	0.192*	1.79
#Blockholder(t-1)	-0.336**	-2.22
#HF	-0.318*	-1.66
Largest Investment Advisor	0.404	0.72
Largest Holding Company	-6.538	-0.30
Largest HF	-1.440**	-2.46
Largest Company	-0.760	-1.53
McFadden R <sup>2</sup>	53.55%	
LR Ratio	72.127	
Number of Observations	102	

\*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table IV**  
**Cumulative Average Abnormal Returns**

This table reports the cumulative abnormal returns (CDAX<sup>®</sup> is the corresponding benchmark) for various event windows, the Böhrer, Masumeci, and Poulsen (1991) *z*-score, the *t*-values, the *J*-value, and the Wilcoxon's *z*-score associated with the cumulative average abnormal return and tested for statistical significance. Panel I includes all hedge fund and private equity events (entire sample) (n = 226); Panel II covers private equity events (n = 159); and Panel III covers hedge fund events (n = 67). The last two rows report statistical tests for differences between the CARs of Panels II and III using *t*-tests for differences in means and Wilcoxon rank sum tests for differences in the medians.

Event window	Panel I: All Transactions					Panel II: Private Equity Transactions					Panel III: Hedge Fund Transactions					Test for Differences	
	CAR	Boehmer Test	<i>t</i> -Test	Johnson Test	Wilcoxon Signed Rank Test	CAR	Boehmer Test	<i>t</i> -Test	Johnson Test	Wilcoxon Signed Rank Test	CAR	Boehmer Test	<i>t</i> -Test	Johnson Test	Wilcoxon Signed Rank Test	<i>t</i> -Test	Rank Sum Test
	Mean	<i>z</i> -Score	<i>t</i> -Value	<i>J</i> -Value	<i>z</i> -Score	Mean	<i>z</i> -Score	<i>t</i> -Value	<i>J</i> -Value	<i>z</i> -Score	Mean	<i>z</i> -Score	<i>t</i> -Value	<i>J</i> -Value	<i>z</i> -Score	<i>t</i> -Value	<i>z</i> -Score
[-30;+30]	4.59%	2.89***	2.50**	2.51**	-2.653***	5.23%	2.64***	2.26**	2.28**	-2.15**	3.38%	1.27	1.12	1.11	-1.43		
[-20;+20]	4.47%	3.54***	3.24***	2.56**	-2.66***	3.55%	2.52***	3.24***	1.78*	-1.69*	6.24%	2.57**	2.62***	1.88*	-2.09**	0.35	0.78
[-20;+10]	4.15%	3.87***	3.54***	3.17***	-3.17***	3.89%	3.34***	3.54***	2.69***	-2.42**	4.64%	2.00**	2.14***	1.71*	-1.91*	-0.19	0.51
[-10;+20]	4.62%	4.00***	3.92***	3.23***	-3.23***	3.79%	2.87***	3.92***	2.24**	-2.10**	6.25%	2.90***	3.08***	2.40**	-2.57**	0.42	0.68
[-10;+10]	4.32%	4.49***	4.45***	4.09***	-3.64***	4.14%	3.98***	4.45***	3.48***	-3.18***	4.65%	2.19**	2.51***	2.23**	-1.91*	-0.16	-0.30
[-10;+5]	4.58%	4.82***	4.61***	4.37***	-4.21***	4.44%	3.92***	4.61***	3.59***	-3.50***	4.83%	2.78***	2.87***	2.50**	-2.35**	-0.21	-0.01
[-10;0]	3.07%	4.04***	3.38***	3.57***	-3.99***	2.79%	3.15***	3.38***	2.71***	-3.11***	3.62%	2.63***	2.72***	2.39**	-2.51**	0.15	0.18
[-5;+5]	4.46%	5.03***	5.10***	4.78***	-4.06***	5.05%	4.62***	5.10***	4.64***	-3.75***	3.31%	2.14**	2.16***	1.85*	-1.69*	-1.25	-1.02
[-5;0]	2.96%	4.61***	4.35***	4.56***	-3.73***	3.40%	4.34***	4.35***	4.69***	-3.89***	2.10%	1.75*	1.82***	1.50	-1.02	-1.11	-1.10

\*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.



**Table V**  
**Determinants of the Cumulative Abnormal Returns**

The sample is divided into hedge fund and private equity targets. For each group, we estimate a control model, two explanatory models, and an agency model. All test statistics are computed using White's (1980) heteroskedasticity-consistent covariance matrix. For estimation, we use the [-10;+10] event window of the cumulative abnormal returns as a dependent variable in all regressions. The exogenous determinants are:

- 1) Liquidity: The Amihud (2002) illiquidity measure (ILLIQ) is defined as the daily ratio of absolute stock return to its euro volume, averaged one calendar year prior to the announcement day.
- 2) Run-Ups/Drawdowns: Geometric mean of the stock price return calculated over 200 trading days before the event.
- 3) Beta: Beta coefficient calculated over 200 trading days before the event (estimation period of the event study analysis).
- 4) Syndication: A hedge fund follow-on dummy variable equal to 1 if a second hedge fund invested in the same target three months to one year after the first.
- 5) Affiliated Company: Dummy variable equal to 1 if the company is an affiliate of a corporation.
- 6) Leverage: Total Debt Percentage Total Assets = (Short-Term Debt and Current Portion of Long-Term Debt + Long-Term Debt)/Total Assets \* 100.
- 7) Free Cash Flow: Cash Earnings Return on Equity = Funds from Operations/Last Year's Common Equity \* 100.
- 8) ROA: Return on Assets = (Net Income before Preferred Dividends + ((Interest Expense on Debt - Interest Capitalized) \* (1 - Tax Rate)))/Last Year's Total Assets \* 100.
- 9) Equity Growth: Equity One-Year Growth = Current Year's Common Shareholder Equity/Last Year's Common Equity - 1) \* 100.
- 10) Market-to-Book Ratio: Market-to-Book Value = Market Price-Year-End/Book Value per Share.
- 11) Largest HF: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a hedge fund.
- 12) Trading Volume: Abnormal daily trading volume in thousands EUR from the period of ten days prior to ten days after the event.
- 13) Firm Size: We use the logarithm of the year-end market capitalization in millions of euros as our proxy for firm size.
- 14) EPS: Earnings per share represent the earnings for the twelve months ending the fiscal year of the company.
- 15) Largest Investment Advisor: A dummy variable equal to 1 if the largest blockholder at the time of acquisition is an investment advisor.
- 16) #Blockholder(t-1): Number of blockholders one quarter before the acquisition.
- 17) # PE: Number of private equity funds one quarter of the year before acquisition.

	Hedge Funds				Private Equity			
	Control	Model I	Model II	Agency	Control	Model I	Model II	Agency
Constant	0.024	0.061*	0.108*		0.036	0.039	0.092***	
Liquidity	2.419*				6.641			
Run-Ups/Drawdowns	-7.960				-0.951			
Beta	-0.023				-0.023			
Syndication	0.069							
Affiliated Company					-0.007			
Leverage		-0.001				0.000		
Free Cash Flow		0.000				0.000		
ROA		-0.002***	-0.002**			0.003**	0.003***	
Equity Growth		-0.000***				0.000		
Market-to-Book Ratio		0.005	0.000			-0.009***	-0.011***	
Largest HF		-0.097***	-0.089**			-0.211**	-0.224**	
Trading Volume		0.001***	0.001***			0.003***	0.003***	

*(continued)*

**Table V—Continued**

	Hedge Funds				Private Equity			
	Control	Model I	Model II	Agency	Control	Model I	Model II	Agency
Firm Size			-0.012				-0.005	
Earnings per Share			0.002				-0.001	
Largest Investment Advisor			0.012				-0.181***	
Constant				0.104				0.136***
Free Cash Flow				0.000				0.001*
ROA				-0.002***				0.002**
Market-to-Book Ratio				-0.001				-0.009***
Firm Size				-0.010				-0.012***
# Blockholder (in t-1)				-0.001				0.010
# PE				0.125**				-0.104***
Largest Blockholder - Investment Advisor				0.003				-0.185**
Largest Blockholder - HF				-0.079**				-0.154***
Number of Observations	61	58	63	62	72	78	82	78
R <sup>2</sup>	9.04%	39.08%	30.16%	24.60%	10.36%	37.51%	43.03%	34.51%
Max VIF	1.043	1.202	2.055	1.606	1.063	1.509	1.382	1.191

\*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table VI**  
**Benchmark-Adjusted Buy-and-Hold Returns**

This table reports the benchmark-adjusted buy-and-hold returns (BHARs) for 150-, 200-, and 250-day holding periods (CDAX<sup>®</sup> is the corresponding benchmark). The entire sample includes all hedge fund and private equity events (n = 226); the private equity subsample covers private equity events without affiliated companies (n = 108); and the hedge fund subsample covers hedge fund events (n = 67). The mean (t-test) and median (Wilcoxon rank sum test) BHARs for all holding periods are tested versus difference from zero. The test for differences analyzes differences between the mean and median BHARs of the private equity and hedge fund subsamples.

	150-Day Holding Period	200-Day Holding Period	250-Day Holding Period
<b>Entire Sample BHARs</b>			
Mean	1.44%	1.92%	-0.51%
Median	-4.71%***	-8.04%***	-9.58%***
<b>Private Equity Subsample BHARs</b>			
Mean	4.11%	4.10%	3.25%
Median	-0.61%**	1.15%	-2.47%**
<b>Hedge Fund Subsample BHARs</b>			
Mean	-0.2%	3.50%	-1.02%
Median	-11.95%	-14.61%	-21.46%***
<b>Test for Differences of the Private Equity and Hedge Fund Subsample BHARs ...</b>			
... Mean	-0.546	0.032	-0.371
... Median	-1.217	-1.367	-1.732*

\*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

## Appendix: Variable Definitions

Variable Name	Definition
# PE	Number of private equity funds one quarter of the year before acquisition
# Blockholder	Number of blockholders at the time of acquisition
# Blockholder(t-1)	Number of blockholders one quarter before the acquisition
# HF	Number of hedge funds one quarter before the acquisition
% Acquired	Number of common shares acquired in the transaction plus any shares previously owned by the acquirer, divided by the total number of shares outstanding
Affiliated Company	Dummy variable equal to 1 if the company is an affiliate of a corporation
Assets	Logarithm of total assets in millions of euros
Beta	Beta coefficient calculated over 200 trading days before the event (estimation period of the event study analysis)
Largest Company	A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a company
Largest HF	A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a hedge fund
Largest Holding Company	A dummy variable equal to 1 if the largest blockholder at the time of acquisition is a holding company
Largest Investment Advisor	A dummy variable equal to 1 if the largest blockholder at the time of acquisition is an investment advisor
Cash	Logarithm of cash, which represents money available for use in the normal operations of the company.
Cumulative Abnormal Return (CAR)	Sum of abnormal returns observed within the event period
Dividend Payout	Common Dividends (Cash)/(Net Income before Preferred Dividends - Preferred Dividend Requirement) * 100
Earnings per Share	Earnings per share represents the earnings for the twelve months ending the fiscal year of the company
Equity Growth	Equity One-Year Growth = Current Year's Common Shareholder Equity/Last Year's Common Equity - 1) * 100
Firm Size	We use the logarithm of the year-end market capitalization in millions of euros as our proxy for firm size
Free Cash Flow	Cash Earnings Return on Equity = Funds from Operations/Last Year's Common Equity * 100
Interest Expenses	Interest expenses on debt divided by sales
Leverage	Total Debt Percentage Total Assets = (Short-Term Debt and Current Portion of Long-Term Debt + Long-Term Debt)/Total Assets * 100
Liquidity	The Amihud (2002) illiquidity measure (ILLIQ) is defined as the daily ratio of absolute stock returns to its euro volume, averaged one calendar year prior to the announcement day
Market-to-Book Ratio	Market-to-Book Value = Market Price-Year-End/Book Value per Share
ROA	Return on Assets = (Net Income before Preferred Dividends + ((Interest Expense on Debt - Interest Capitalized) * (1 - Tax Rate)))/Last Year's Total Assets * 100
Run-Ups/Drawdowns	Geometric mean of the stock price return calculated over 200 trading days before the event
Syndication	A hedge fund follow-on dummy variable equal to 1 if a second hedge fund invested in the same target three months to one year after the first
Trading Volume	Abnormal daily trading volume in thousands of euros from the period of ten days prior to ten days after the event

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