

# Do Corporate Governance Motives Drive Hedge Funds and Private Equity Activities?

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## Abstract

*We address the question of whether hedge fund and private equity investments in public firms are motivated by corporate governance improvements. As opposed to traditional financial investors both HF and PE are likely to have the incentives to alleviate agency conflicts. However, against the background of differences in their business models and organizational set ups, it remains an empirical question of whether they address the same or different agency conflicts. Studying HF and PE activities in a typical Continental European market like Germany promises to offer interesting insights about how HF and PE activities relate to the prevalence of family ownership, concentrated ownership structures and conflicts among majority and minority owners. We document empirical evidence that both HF and PE investments are driven by corporate governance improvements, but seem to address different types of agency conflicts. Whereas HF focus on firms with a lack of a controlling shareholder, in particular family shareholders, PE invest in firms which exhibit the potential to align manager-shareholder interests due to low managerial ownership. Both appear to address free cash flow problems differently. Aiming at dividend increases, HF tend use commitment devices that can be implemented over a short horizon. In contrast, PE are inclined to target firms which are particularly well-suited for a leverage increase because of low expected financial distress costs. This strategy requires a sufficiently long investment horizon.*

Keywords: *Private equity, hedge funds, corporate governance*

JEL classification: G34

## 1 Introduction

The public equity markets activities of hedge funds (HF) and private equity funds (PE)<sup>1</sup>, both belonging to the alternative investment class, increasingly receive media and academic attention. Anecdotal evidence suggests that they gain influence on managers and interfere with corporate policy. Prominent cases include, for example, The Children's Investment Fund (TCI) pressuring Deutsche Börse to cancel its planned acquisition of the London Stock Exchange and enforcing the resignation of former CEO Werner Seifert, or the well-known case of KKR investing in RJR Nabisco, one of the largest PE transactions.

Against the background of their organizational set up and business model both HF and PE are likely to have incentives to create shareholder value from agency cost reduction which sets them apart from traditional investors. Monitoring incentives are generated by increased effective ownership that stems from performance-oriented remuneration for fund managers and usually high use of leverage. Previous empirical studies reveal a link between their investment decision and the motive of agency cost reduction (e.g., for HF Clifford (2007), Brav et al. (2008), Klein and Zur (2009) and for PE, e.g., Opler and Titman (1993), Halpern et al. (1999), Renneboog et al. (2007) or Weir et al. (2005b)). It is an empirical question whether they solve the same or different agency conflicts.

Furthermore, the regulatory debate perceives the high profit orientation and alleged short termism of those investors to impair stakeholders' interests and long term prospects of target firms. Within the context of the Proposal for a Directive on Alternative Investment Fund Managers the European Commission considers a new regulation of HF and PE that addresses these concerns among other issues. The European Commission acknowledges that "a one size fits all approach" is not appropriate.<sup>2</sup> Against this background we investigate the different investment strategies of HF and PE in a typical Continental European equity market. An understanding of the drivers of HF and PE investment choices is crucial in order to evaluate whether potential policy measures should address them jointly or separately.

The present paper contributes to the existing literature in two primary respects: (i) with a particular focus on agency conflicts the study is the first to directly compare the characteristics of HF and PE investment styles in public equity and (ii) it analyzes the interplay of HF and PE investments with the distinct features of a Continental European corporate governance system.

The study of the motives of HF and PE is particularly interesting with respect to Germany. Like many Continental European countries, it exhibits a corporate governance system that differs from the Anglo-Saxon model: weaker protection of minority shareholders (la Porta et al. (1999)), reduced expo-

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<sup>1</sup> We speak of PE in the narrow sense, i.e., later stage investments. The wide sense of PE includes both early stage (i.e., venture capital) and later stage investments.

sure of managers to hostile takeovers (Franks and Mayer (1998), Loderer and Peyer (2002)) and high degree of ownership concentration (Andres (2008)). The first two characteristics imply the potential for investors to pursue governance improvement strategies. The third characteristic suggests that due to more concentrated ownership structures, agency conflicts might be dominated by conflicts that do not exist between shareholders and managers but between large and small shareholders. In this case, the investment might be motivated by the intention to discipline large shareholders that extract private benefits. Until the late 1990s, ownership structures in Germany were largely characterized by cross-holdings among major German firms, with banks and insurance companies in the center of the shareholding network. This system - referred to under the term "Deutschland AG" - was criticized of impairing effective corporate governance control. Before the unbundling, corporate control was mainly exerted by banks and other corporations via supervisory board representation. The start of activities of HF and PE in the German equity market followed shortly after the unbundling of Deutschland AG was initiated in the late 1990s. This observation might not be coincidental but may be explained by HF and PE aiming at the profitable exploitation of the control vacuum which was generated by the unbundling.

Based on a sample of 96 HF entries and 57 PE entries in German firms between 1998 and 2007, we study the HF and PE investment behavior by analyzing the characteristics of target firms using binomial logistic regressions. Our analysis focuses on agency cost reduction as the main value driver of interest. The analysis is restricted to the major intersection of both players, i.e., investments in publicly listed firms. Furthermore, the empirical study is limited to the ex-ante target characteristics and does not include the consequences of the involvement of financial investors such as share price developments or changes in the firms' financials or operations.

We document empirical evidence that both HF and PE investments are driven by corporate governance improvements, but seem to address different types of agency conflicts. Whereas HF focus on firms with a lack of a controlling shareholder, in particular family shareholders, PE invest in firms which exhibit the potential to align manager-shareholder interests due to low managerial ownership. Both appear to address free cash flow problems differently. Aiming at dividend increases, HF tend to use commitment devices that can be implemented over a short horizon. In contrast, PE are inclined to target firms which are particularly well-suited for a leverage increase because of low expected financial distress costs. This strategy requires a sufficiently long investment horizon. The difference in the time horizons over which corporate governance is improved can be traced to the distinct compensation schemes of HF and PE.

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<sup>2</sup> See the Proposal for a Directive on Alternative Investment Fund Managers (2009), p. 5.

The remainder of the paper is organized as follows: section 2 characterizes the distinct business models of HF and PE and reviews previous literature. We argue that they are expected to solve agency problems as opposed to traditional financial investors. Section 3 develops hypotheses about the typical target characteristics of HF and PE. Section 4 describes the empirical design and comments on summary statistics. Subsequently, the empirical results are presented and interpreted in section 5. Section 6 concludes.

## **2 Comparison of business models and related evidence**

There are several commonalities between HF and PE. Both are privately organized investment firms equipped with large capital resources and employing professional fund managers to maximize investment returns. They are both part of the alternative investment class which is to be distinguished from traditional institutional investors such as asset management firms. Generally, their direct client base consists of sophisticated investors as opposed to traditional institutional investors. As a consequence, they are exempt from several regulatory obligations which usually apply to investment firms. HF and PE are, for instance, allowed to strongly link up fund managers' compensation to investment performance. Typically, a fund manager's share in his own investment success amounts to 20% of the fund's annualized returns (Clifford (2007)). Moreover, due to the reduced degree of regulation, they are allowed to make heavy use of debt financing. This can enhance returns and increase effective ownership. The higher flexibility resulting from the characteristics in terms of incentives for fund managers and leverage might enable HF and PE to pursue investment strategies that are not open to traditional shareholders. Against this background, improving the corporate governance might be a profitable strategy for HF and PE but not for traditional funds. Empirical evidence supports this view by indicating that traditional asset managers fail in trying to benefit from agency cost reduction (e.g., Gilian and Starks (2007)).

There are substantial differences in the business models of HFs and PE (see Table 1 for a summary). HF engage in a variety of asset classes such as commodities, options, futures or foreign exchange of which activities related to publicly listed firms only represent one among numerous strategies; in contrast to that PE focus their investment activities on equity investments. This difference is then also reflected in the personnel pool from which both types recruit their investment professionals. While HF mainly recruit employees with financial markets expertise (e.g., from proprietary trading), PE additionally recruit personnel with substantial operational expertise, e.g., former management consultants and industrial top managers (Cressy et al. (2007)). These differences in the degree of equity specialization suggest that PE are likely to have superior abilities in understanding and evaluating the target's business and identifying potential levers to improve shareholder value.

One of the most striking differences is the time horizon of the two types of funds linked up to their organizational set-ups. After their initial investment in HF, investors have to wait for an average of

ten months before they can withdraw their capital. After this lock-up period, investors have to wait for another four months on average until they can take back their invested funds (Agarwal et al. (2009)). HF performance is evaluated on a marking to market basis. The fees are determined according to the net asset value of the fund periodically, mostly on an annual basis. This implies a relatively short investment horizon and a preference for liquid securities such that the value can easily be determined from observing market prices. Moreover HF investors cannot withdraw capital on an immediate basis like in the case of mutual funds, for instance. Instead, there are regular redemption dates at which clients can withdraw capital from the fund. In sum, HF prefer holding positions which can be liquidated quickly and at low cost.

In contrast to HF, which in principle have an infinite life, PE funds are set up for a finite period of on average ten years (Sahlman (1990)). During this time, the existing investors cannot withdraw their capital and the fund is closed to new investors. This condition is likely to commit PE to maximize the fund value over a long horizon. Unlike HF, the fund's value is not evaluated on a periodical basis, but at the end of the holding period, i.e., when all investments are realized. Investors cannot withdraw their capital before the final liquidation of the fund. As a consequence, PE are relatively patient investors and able and willing to hold illiquid assets. These organizational differences are likely to be a key determinant of the investment strategies with respect to public equity.

Previous empirical findings on HF and PE indicate that they successfully act as corporate control agents and, hence, create shareholder value. The phenomenon of shareholder activism by HF was initially observed in the U.S. in the early 1990s, and there exists a substantial body of empirical work. This literature characterizes the activist strategies, their impact on stock returns in the short and long run, target characteristics and fundamental changes in the firms subsequent to HF entries (see Table 2 for an overview).

Empirical findings suggest that HF usually do not acquire controlling blocks but minority stakes (Brav et al. (2008)). This is in line with their short investment horizon as it allows them to exit their investments quickly and at low cost. In order to gain influence over targets, HF typically make use of shareholder rights such as requesting board seats or proxy fights. They also use informal ways of attaining influence by using the media and publicly articulating their demands. These informal ways are probably gaining more relevance in the German market. Due to their small share of voting rights, HF have to rely on the cooperation or passive support of other shareholders in order to achieve their goals.<sup>3</sup>

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<sup>3</sup> According to U.S. regulation, all investors which purchase a stake or more than 5% in a public firm, have to make a 13D filing with the SEC. In this filing, they must report whether they are passive or active investors and in the latter case the goals of activism have to be made explicit. This regulatory requirement facilitates the analysis of activist HF strategies in the U.S.. In Germany, such regulation is to come in place as part of the Risikobegrenzungsgesetz (Risk Limitation Act).

The capital market unambiguously appreciates the involvement of HF – upon the announcement of HF entries, share prices rise significantly (Brav et al. (2008), Clifford (2007), Klein and Zur (2009), Boyson and Mooradian (2007), Greenwood and Schor (2007)). But what constitutes this effect is less clear. Clifford (2007) analyzes passive and active HF investments in U.S. equity. He argues that there are two explanations for the observation of positive excess returns around the announcement date of an HF entry: they can proxy for anticipated value increases due to agency cost reduction or reflect the fact that the market attributes superior stock picking abilities to HF. Several studies document that HF targets have sound operating profits, large cash holdings, small dividend payments and low growth opportunities (Brav et al. (2008), Klein and Zur (2009), Boyson and Mooradian (2007)). Subsequent to HF entries, dividend payments and leverage are increased whereas cash holdings are reduced. Greenwood and Schor (2007) sketch a less optimistic picture of HF as corporate governance advocates and argue that they are primarily undertaking merger arbitrage. Clifford (2007) argues that if HF strategies are restricted to stock picking, then the stated goals should not matter for abnormal returns which they do according to the empirical results.

To the best of our knowledge, there is only one empirical paper studying HF activism for the German market. Bessler and Holler (2008) study short and long-term returns subsequent to HF entries in Germany. The authors find that HF have superior skills in identifying undervalued assets and speculating in mergers and acquisitions rather than being effective monitors in the long run. In summary, previous evidence in the U.S. and Germany indicates that HF follow various strategies when purchasing blocks in public equity: they invest in undervalued firms, they act as corporate control agents in mergers and acquisitions and they aim at reducing agency costs.

There are numerous studies on PE in the U.S., fewer in Continental Europe and in particular Germany. In the following, we will introduce the main findings of a selection of PE literature (see Table 3 for a short summary). Generally, three approaches are followed in order to identify sources of value creation: the cross-section of market reactions to the announcement of PE entries, the cross-section of premia paid and target characteristics. Lehn and Poulsen (1989) analyze going private transactions in the U.S. and find that the likelihood of being taken private positively depends on free cash flow, prior takeover interest and is inversely related to sales growth. The premia paid to existing shareholders are driven by large cash holdings and low managerial equity. The authors conclude that PE align incentives between managers and shareholders and reduce agency costs associated with free cash flow. Andres et al. (2007) study the market reactions to LBO announcements in Continental Europe. They find that the abnormal returns are driven by free float, managerial inefficiency and undervaluation. On a country level, their findings suggest that abnormal returns are inversely related to the protection of minority shareholders. Apparently, PE are able to resolve monitoring deficits. Opler and Titman's (1993) LBO study finds that the combination of high cash and low growth prospects drives the takeo-

ver likelihood. High amounts of free cash seem to cause agency problems in firms which do not have attractive investment opportunities, as the danger of managers spending cash on inefficient projects is more pronounced. Under the assumption that a leverage increase represents an important instrument in order to realize the gains from the transactions, firms with high expected financial distress costs are unlikely targets. Their empirical findings are consistent with this assumptions: the expected costs of financial distress of targets are low as proxied for by R&D spending or selling expenditures. In addition, Halpern et al. (1999) find that LBO likelihood increases with poor prior stock performance. This result suggests that PE target firms are inefficiently managed or suffer from undervaluation by the market. In the former case they aim at reducing agency costs and in the latter PE intend to draw value from reducing information asymmetries and hence take over a certification function. This result is also replicated in the study of Renneboog et al. (2007) on UK transactions. The studies of Weir et al. (2005a), Weir et al. (2005b) and Weir et al. (2008) provide further evidence on UK transactions. Weir et al. (2005a) and Weir et al. (2005b) find that going private targets are more likely to suffer from undervaluation by the market and are likely to have inefficient internal governance mechanisms. Similar to Opler and Titman (1993), Weir et al. (2008) analyze the role of financial distress costs with respect to the going private decision in the UK. According to their findings, UK targets exhibit a high asset collateralization and are more diversified.

To the best of our knowledge, there is only one study analyzing PE investments in the German stock market. Achleitner et al. (2009) perform an event study of the announcement of PE investments in German. According to their findings, the market reaction is driven by undervaluation, low actual use of leverage and the size of tax payments.

Summing up, both HF and PE are flexible investment firms with high incentives for investment managers. These properties enable them to draw value from corporate governance improvements. It remains an empirical question how fundamental differences in their business models and, in particular, their investment horizons are reflected in their pursuit to reduce agency conflicts.

### **3 Corporate governance related investment motives**

We argue that HF and PE activities are driven by corporate governance improvements. To test this hypothesis and analyze potential differences among HF and PE investment styles, we study target characteristics that proxy for the existence of agency conflicts. We focus on two different groups of indicators for the potential to reduce agency costs: free cash flow and financial distress as well as ownership structure. See Table 4 for a summary.

#### **3.1 Free cash flow and financial distress**

According to the free cash flow theory (Jensen (1986)), firms with excess cash positions are likely to exhibit agency problems. It is argued that cash richness creates opportunities for inefficient invest-

ment behavior. Managers can use readily available resources to pursue their own interests rather than that of their shareholders. Instead of piling up cash, managers should return excess resources to shareholders via share buybacks, regular or special dividends, if high liquidity is not needed for further positive net present value investments. Agency costs stemming from free cash flow are most likely to occur in mature and stable businesses with few growth opportunities. If a mature firm needs additional liquid resources, it should address debt or equity markets which would then scrutinize the project's efficiency.

According to da Silva et al. (2004), dividends may be a bonding mechanism and hence a substitute corporate governance mechanism to other internal governance mechanisms. A high dividend payment forces managers to generate sufficient cash flows and to pursue shareholder value maximization. This may reduce the monitoring efforts of the board of directors or shareholders and hence may mitigate agency costs arising from financial slack.

Jensen (1986) argues that debt financing presents another instrument for committing managers not to waste cash on potentially inefficient investment projects. Taking on additional debt reduces financial slack as managers are bound to use cash from operations to redeem the debt. According to this view, debt financing is more binding than dividends, as those can be cut more easily compared to the cancellation of debt contracts. Thus, firms with unused debt capacity offer disciplinary potential. Margaritis and Psillaki (2007) offer empirical support for the hypothesis that leverage can serve as a disciplinary tool to mitigate agency costs of outside ownership and lead to an improvement of efficiency.

Following Jensen (1986), problems associated with free cash flows are more pronounced in firms that do not have attractive growth opportunities. Growing firms need liquid resources for investments which is why they have to turn to equity and debt markets on a regular basis. Requesting new capital entails a monitoring mechanism, as the investors will scrutinize the investment project prior to the supply of capital. As a consequence, large cash positions in growing firms are less likely to create managerial discretion. High growth opportunities are also related to information asymmetries (Clarke and Shastri (2001)). A mature firm with stable cash flows is less risky, as a substantial part of its profit potential has already materialized. The value of a high-growth firm largely consists of the anticipation of future profits. Hence, debt financing is more easily obtainable for stable and mature firms, as they have more collateralizable assets (Opler and Titman (1993), Weir et al. (2008)).

Implementing commitment devices that reduce financial slack may have the downside of increasing expected financial distress costs as brought forward by Opler and Titman (1993). Therefore, the potential to reduce financial slack is likely to be inversely linked to expected financial distress costs.

We hypothesize that HF and PE can create value by resolving excess cash positions or establishing commitment devices that reduce the free cash flow available at managerial discretion. They can thereby reduce agency costs stemming from financial slack. To test this hypothesis we analyze the firm's

cash position, the actual level of debt financing as a proxy for debt potential, growth perspectives and proxies for financial distress such as R&D expenditures and the collateralization of assets.

### **3.2 Ownership structure**

Shareholder size and identity are the main determinants of monitoring incentives (Shleifer and Vishny (1986), Grossman and Hart (1980)). The lower the shareholders' incentives to monitor, the more likely will the firm exhibit agency problems. We argue that a firm whose ownership structure fails to reduce conflicts between managers and shareholders on the one hand and conflicts between minority and majority shareholders on the other hand is likely to become involved with an active investor. We hypothesize that HF and PE aim at aligning interests between managers and shareholders and at the reduction of private benefits extraction by dominating shareholders.

Managerial ownership is recognized as an important mechanism to align the interests of owners and managers. Empirical evidence documents the success of managerial ownership in reducing agency costs (Beiner et al. (2006)). Therefore, the potential to reduce agency costs is likely to be limited in the presence of high managerial ownership.

Family ownership presents a distinct feature of the German equity landscape. This phenomenon is less prevalent in Anglo-Saxon markets. There is empirical evidence that family owners are successful in dealing with agency conflicts (Andres (2008)). This can be explained by families usually holding a large fraction of their wealth invested in the firm. This large and non-diversified exposure generates high monitoring incentives. Furthermore, families are generally invested over a long time horizon. The knowledge and expertise regarding the firm's operations as well as the reputation which they have built up with other shareholders positively affects their ability to effectively monitor managers.<sup>4</sup>

Ownership concentration represents a further typical feature of the German equity market. Typically, ownership structure is considered as an indicator for the monitoring efficiency: manager-shareholder conflicts are more likely to be more prevalent in the presence of dispersed ownership. Shleifer and Vishny (1986) argue that dispersed ownership may produce a free-riding situation with respect to investments in monitoring technologies. A shareholder undertaking monitoring activities bears the entire costs while all other shareholders free ride.

In the U.S., agency problems are claimed to arise predominantly because of dispersed ownership and thereby few monitoring incentives. However, due to the high degree of ownership concentration, the more relevant conflict in Germany is said not to arise between managers and shareholders but between large and small shareholders (Gugler and Yurtoglu (2003)). Large shareholders can extract

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<sup>4</sup> There are also arguments for a negative impact of family shareholders: families are likely to have interests that are not necessarily shared by other shareholders such as concerns about the firm's image or reputation and debt aversion (Mishra and McConaughy (1999)).

private benefits at the expense of the wealth of minority shareholders. Private benefits are defined as the extraction of more than proportional rents relative to the size of cash flow rights.

## **4 Empirical design and descriptive statistics**

### **4.1 Methodology and dataset construction**

The main goal of the empirical analysis is to develop an understanding of how target characteristics affect the odds of a firm becoming involved with HF or PE. The standard technique used for takeover prediction is binomial logistic regression analysis. This model tests the direction and the extent to which firm characteristics affect the likelihood of a firm becoming a target. For the construction of the control group there is the choice between two sampling procedures: random sampling and matched sampling. There are good reasons for and against the use of a matched sample. Several authors argue in favor of matching because financial ratios like leverage, operating profitability or investment volume largely differ across industries, size categories or growth perspectives. Against this background, matching can make the control group more comparable to the target group (Song and Walkling (1993)). There are also compelling arguments against the use of matching (Halpern et al. (1999)). First, industry membership, size and growth opportunities are variables of interest for our purposes. By using matching it would not be possible to see whether these characteristics make a difference for the odds to become a target. Second, there are inaccuracies in the definition of an industry (Clarke (1989)) – it is questionable whether industry membership is a meaningful measure. Consequently, industry-matching may not necessarily result in obtaining a comparable control sample. In addition, there are two pragmatic reasons for the use of a random rather than a matched control sample: as the German equity market is relatively small compared to the U.S. market, the number of comparable firms is also relatively small and for some targets it would therefore be difficult to obtain a good match. Moreover, because the distribution of targets and non-targets across industries is similar in the present sample (see Table 5) – the concern regarding overrepresentation of one industry does not apply to the present case. Empirical evidence (Song and Walkling (1993)) does not find that matching significantly changes the test results. Overall, the literature has not come to a final conclusion of whether matching is superior or not from a methodological perspective. In this paper, due to the reasons given above, a random control sample is employed.

As suggested by Halpern et al. (1999), we use a temporal matching procedure in order to account for economy-wide influences. Temporal matching is implemented as follows: we randomly select announcement dates from the target samples in order to determine the dates for the collection of control sample data. As a result, the distribution of control firms over time broadly resembles that of target firms (see Table 6).

The dataset underlying the present empirical analysis comprises 96 HF targets, 57 PE targets and 96 non-targets serving as control firms. The HF sample has been collected from a database provided by

the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin), the German Financial Supervisory Authority. The database comprises all reported shareholdings according to § 21 of the German Securities Trading Act. According to § 21, an institution or person has to report his shareholding to BaFin and the issuer if it exceeds or falls below certain threshold values of 3%, 5%, 10%, 25%, 50% or 75%. BaFin and the issuing firm then publicize this information. The database lists the underlying share, the reporting date of the transaction, the identity of the shareholder, his location of incorporation and the fraction of shares held after the respective transaction. The BaFin database includes the name of the investor but no information about his type, i.e., whether the reporting institution is an HF, mutual fund, industrial firm, individual etc. Hence, further work is required in order to identify those HF that acquire visible stakes in publicly listed firms. The fact that there is no legal definition of an HF further complicates the identification of HF investments. We proceed as follows: the entire database is screened for reporting institutions that are neither individuals nor industrial firms nor banks or insurance companies. Each remaining reporting institution is then checked for being an HF using Factiva, LexisNexis, Google and investor magazines. In order to qualify as HF, the institution has to fulfill one of the following criteria: (i) being classified as HF in the financial press or an investor magazine or (ii) defining themselves as HF on their webpage. Several traditional asset managers like UBS have set up funds whose investment strategies resemble those of HF, e.g., by the use of derivatives. It is not possible to distinguish whether the financial institution holds the equity stake as part of their HF or traditional business. We exclude those ambiguous cases. Furthermore, only the first entries of HF into a firm are included in the sample. The relevant entry dates have been cross-checked with the financial press as BaFin reports usually entail a considerable time lag.

The PE sample is collected with the help of the Merger Market database. Among other transactions, Merger Market provides information on PE investing in German equity. Targets in the financial sector were excluded from both the HF and PE sample for the following reasons: (i) financial statements are difficult to be compared to the statements of industrial firms and (ii) there may be other motivations for these investments like strategic co-operations with the targets.

96 control firms were randomly selected from CDAX firms excluding all HF and PE targets as well as financial firms. Firm data for the control sample was chosen from the entry years of the targets in order to avoid biases due to potential macro-wide influences particular to a certain year. The exact dates were randomly chosen from the target sample. In order to avoid a potential survivorship bias, we randomly chose firms from the CDAX list of the respective year. Accounting information on the firm level refers to the figures in the fiscal year before the announcement of investor entry.

## **4.2 Summary statistics**

PE started to become involved with German publicly listed firms in 1998 (see Table 6). 2005 exhibits the highest number of entries with 13 investments. HF assumed their German activities with a lag: the

first HF investment detectable by the sample selection procedure described below was observed in 2001. Nearly 90% of all the entries were observed between 2005 and 2007, with a peak of 40% of all HF events in 2007. This difference in distribution over time requires temporal matching as discussed in the methodology section. In the U.S., there was a PE as early as the 1980s. HF investments in the U.S. have been observed since the mid-1990s. The time lag with respect to Germany can be first attributed to the fact that most HF and PE are U.S.-based firms and test their strategies in their domestic market before competition makes them expand internationally. Second, the German market became more attractive for foreign investors due to the 'unbundling of the Deutschland AG' (Bessler and Holler (2008)) and the concomitant re-orientation of how German firms should be governed. It was argued that the complex cross-shareholdings and the mutual control of supervisory boards among German corporations impaired effective corporate governance control. Discussions in the late 1990s on the need for action resulted in the enactment of a new law which allows corporations to sell their equity stakes in other firms tax-exempt. Following the new tax rule, many key players in the center of Deutschland AG such as Deutsche Bank AG, Allianz AG or Münchener Rück AG committed to sell their numerous equity stakes. The coincidence of the unbundling and the start of HF and PE activities could be interpreted as the re-orientation generating the potential for investment strategies aimed at the improvement of corporate governance.

In 2007, there were only three publicly announced PE transactions, all of which occurred in the first half of the year. This could be traced to the subprime crisis which started in mid-2007 and made it difficult to obtain debt financing at attractive terms.

Table 5 shows the distribution of target and non-target firms across industries. Overall, the distribution across industries exhibits weak patterns, but there is no clear overrepresentation of one or more industries. HF investments are most commonly observed in the following industries: industrial, software and media. The most common sectors of PE targets are consumer goods, industrials and software. There are noticeable differences between HF and PE in the following industries: pharma & healthcare (rather preferred by HF) and consumer goods (rather preferred by PE). This difference may reflect the general preference of PE to invest in stable businesses that exhibit a low degree of uncertainty. The distribution of the financial investor targets grossly resembles the industry distribution of the firms randomly selected from CDAX.

HF and PE targets significantly differ with respect to the size of the acquired stakes (see Table 7). PE hold much more concentrated positions relative to HF when looking at the euro volume of the stakes. Consistent with the statement in section 2, HF investors almost always (95.8%) acquire minority stakes. We can only observe three cases in which HF acquire a controlling stake, i.e., a stake in excess of 25%. All HF stakes remain below the threshold of 30% which triggers a mandatory takeover offer according to § 29 and § 35 of the German Securities Acquisition and Takeover Act. In contrast, PE

acquire controlling stakes in 91.2% of the events. 80.7% of the stakes are above the mandatory takeover threshold of 30%. In more than half of the cases, PE acquire more than 75%. This finding is consistent with the initial assumptions that PE aim at full control whereas HF intend to induce only small changes. The threshold of 75% is relevant under the assumption that PE aim at increasing leverage, because it enables PE to set up a control and profit transfer agreement according to § 291 of the German Securities Act which is likely to improve the financing terms for the transaction. Nearly half of the PE targets in our sample have been delisted subsequent to PE entry. With respect to HF, the delisted targets only account for 10% of the sample.

Table 8 summarizes the descriptive statistics of target and non-target firms and Table 9 shows the correlations among the variables. The univariate results suggest that HF targets differ significantly from PE targets. The ownership structure summary statistics suggest that HF target firms with large free float. This may be due to marginal control of their small stakes being higher with increasing free float and also their preference for holding liquid positions which can be sold quickly and at low cost. Large positions could not be exited as easily since they would usually cause a considerable price impact. As opposed to the evidence on the U.S. market (Klein and Zur (2009)), we do not find any support for the hypothesis that target size is particularly small in comparison to randomly selected CDAX firms. However, only 14% of PE targets and 19.8% of HF targets are members of the HDAX. HDAX membership is expected to be positively related to market visibility and accordingly inversely with information asymmetry.

## **5 Empirical results**

In the following we use binomial logistic regressions to analyze the investment motives in a multivariate context. We employ several additional variables in order to control for alternative investment motives that are not necessarily associated with corporate governance improvements but may yet drive the investment decisions.

### **5.1 HF investment motives**

Table 10 shows the regression result for the HF investment motives. We find support for the hypothesis that HF aim at reducing agency costs stemming from free cash flow. The dividend yield is inversely related to the odds of becoming an HF target: in all models, the negative coefficient is significant at the 5% level. This can be interpreted as support for the hypothesis that HF push to raise dividends. However, the observation of a low dividend yield could be attributed to the construction of the measure: HF invest in growth firms and, as the market value of equity is in the denominator of the dividend yield measure, the measure is very small. This suggests that there may be a negative relationship between dividend payout and HF targets because growth firms per se do not pay out much and rather prefer to reinvest the cash from operations into the expansion of their businesses. If this were the case, then the conclusion that HF aim at pushing for dividend increases would be inappropriate. This objec-

tion cannot be upheld because by including Q in the regression, we already control for growth perspectives. Additionally, the results remain robust with respect to the use of the retention rate defined as  $(1 - \text{cash dividend}) / \text{EBITDA}$  and 0 if dividends are larger than EBITDA.

Buybacks represent an alternative to return cash. The results above might be subject to the omitted variable bias: if HF targets are of such a type as to prefer buybacks over dividends, it would be inappropriate to classify them as firms with low cash payouts. The results remain robust if we use a dummy variable for the announcement or the proceeding of share buybacks in the two years prior to HF entry. Even in terms of buybacks, HF targets distribute significantly less cash to shareholders.

We do not find any evidence for the hypothesis that HF aim at investing in firms with the intention of making them pay out excess cash. The insignificance of cash holdings is still maintained when testing for several modified cash proxies such as cash scaled by market value, the absolute size of cash and several interaction terms with growth perspectives. Accordingly, the prominent case of TCI urging Deutsche Börse to return cash to shareholders does not seem to be representative. Moreover, HF targets do not seem to be underleveraged. Quite the reverse: HF targets have slightly more net debt. Moreover, Tobin's Q significantly and positively affects the likelihood of HF entry. As Tobin's Q is positively linked to the costs of financial distress, this suggests that HF targets do not have debt potential.

The positive and significant coefficient of the R&D measure provides further evidence of HF targets not being likely to have debt capacity under the assumption that R&D is a proxy for expected costs of financial distress. Overall, the claim that HF invest in firms in order to burden them with additional debt is not supported by the empirical results. This observation is consistent with the view that HF do not seek a financial turnaround of the target. The positive influence of R&D on the odds of becoming an HF target appears puzzling. Investors with operational expertise have the ability to evaluate the efficiency of R&D projects. R&D is acknowledged as a proxy for information asymmetry due to the high technical complexity of the firm's business. R&D projects are usually unique and their outcomes highly uncertain. These features make it difficult for market participants to value the firm (Aboody and Lev (2000)). Chan et al. (2001) find empirical support for the claim that the market has difficulties in sufficiently appreciating the value of R&D projects. Investors with operational expertise could invest in undervalued R&D firms and thereby make other market participants aware of the undervaluation. Furthermore, it could be argued that investors that are skilled with respect to R&D could cut inefficient R&D and thereby increase shareholder value. Against the background of HF not being equipped with operational expertise, these investment motives are unlikely. However, there exists an alternative explanation: free cash flow is highly sensitive to R&D expenditures. HF could call for cuts in R&D, in order to increase free cash flow which could result in a higher valuation by analysts. This strategy would also be in line with the short investment horizon of HF. Cuts in R&D could have ad-

verse effects on shareholder value in the long run. Further empirical investigation on the consequences of HF investment is required for a more comprehensive understanding of the role of R&D.

In general, the positive relationship between financial distress proxies such as R&D and Tobin's Q could be traced to the HF preference for rather risky investments that is due to their compensation structure: higher risk enables them to generate large returns over a short horizon. Family ownership is inversely related to the likelihood of becoming an HF target. Empirical evidence in Germany (Andres (2008)) suggests that families solve agency conflicts successfully. As a consequence, the negative impact of family ownership on HF investment can be interpreted as support for the incentive alignment hypothesis. With respect to management ownership the empirical results do not establish a significant effect on the odds of becoming an HF target. The management coefficient is negative but fails to be statistically significant. Model 2 includes free float as a control variable and indicates that HF prefer to invest in firms with large free float, which may be due to higher liquidity and higher marginal control. This finding is also in line with the assumption that HF only assume a monitoring function if there is little control over the management in place.

In order to test the private benefits hypotheses, we need to empirically disentangle the degree of ownership concentration and private benefits. In general, these variables should be correlated to a certain degree, as the potential for private benefits extraction presupposes the existence of a dominant shareholder which is positively associated with ownership concentration. For the empirical test of the private benefits hypothesis, several authors (e.g., Achleitner et al. (2009)) employ the size of the second largest shareholder. The size of the second largest shareholder is considered a proxy for his power and his ability to prevent the largest shareholder from extracting private benefits. A more comprehensive measure should account for the difference in power between the largest and the second largest shareholder and thus reflect an interaction between the two variables. Gugler and Yurtoglu (2003) propose the following measure: if the second largest shareholder owns less than 5% of shares, they label this firm as "unchecked", meaning that there is no other powerful shareholder which can reduce the private benefits extraction of the largest shareholder. The authors suggest that the private benefits potential is even greater if there is a controlling shareholder (i.e., a shareholder who owns more than 25%) and the firm is unchecked. In line with these authors, we construct the following dummy variable. Private benefits is set equal to 1 if there is a controlling shareholder and the second largest stake is smaller than 5%. As robustness checks, we additionally include continuous variables to test for the potential power of the largest shareholder to extract private rents: we use the ratio of the largest to the second largest stake as well as their difference.

According to the empirical results, HF eschew firms with potential private benefits issues: the private benefits variable has a negative coefficient with statistical significance at the 1% level. This finding is robust with respect to the use of various alternative proxies and provides clear evidence that HF do

not aim at the reduction of private benefits problems. They do not build up a sufficiently large stake to control or outvote the dominating shareholder.

In the third model, we include several control variables to account for potential alternative investment motives. The involvement of a firm with mergers and acquisitions significantly affects the odds of becoming an HF target as suggested by the positive and significant coefficients of the acquisition and target variables. Speculation in mergers and acquisitions can be profitable: investing potential acquirers is attractive if HF successfully conjecture the settlement or the cancellation of the planned acquisition. The investment in potential targets can reflect the HF's belief that the takeover bid will be increased.

Alternatively, this can be interpreted as HF being active in corporate control and investing in acquirers because they want to prevent management from a potentially inefficient acquisition or in takeover targets in order to make reluctant managers agree to the takeover. Given the present data, it is not possible to distinguish between the merger arbitrage and the corporate control hypothesis. The ex-post information about the success of the alleged merger is not sufficient in order to assess whether HF are passive merger arbitrageurs or active corporate control agents. E.g., if a target is finally being taken over, we cannot be sure whether this is due to the HF or not. Concrete information about potential HF interference is difficult to obtain from publicly available data because much of the influence happens behind the scenes. This gap could be filled by a survey approach.

We perform further robustness checks using prior stock performance and size as control variables. The results do not yield any evidence that HF invest in firms that suffer from poor prior stock performance. Under the efficient market hypothesis, a poor prior stock performance would indicate managerial inefficiency. Thus, in terms of prior stock performance, HF do not seem to seek an operational turnaround of unprofitable firms. We do not find indications for HF investing in undervalued firms as measured by poor prior stock performance under relaxation of the efficient market assumption. Size is generally acknowledged as a proxy for information asymmetry (Frankel and Li (2004)). Small firms receive less attention by capital markets (e.g., Renneboog et al. (2007)). In particular, small firms are less interesting investment objects for traditional institutional investors because of the existence of minimum investment sizes for these investors. As a consequence, there is little trading activity in the shares of small firms which decreases the information content of the share price. Testing size as a proxy for information asymmetry, we cannot find any evidence that HF target small firms. The strategy of investment in undervalued securities due to information asymmetry does not seem to be a representative investment motive of HF.

In a nutshell, the empirical results indicate that HF investments are related to corporate governance improvements: they seem to aim at the reduction of agency problems associated with free cash flow

by dividend increases. Furthermore, they appear to align incentives by investing in firms whose ownership structure does not generate high monitoring incentives.

## **5.2 PE investment motives**

Table 11 shows the results that compare the characteristics of PE targets and non-targets. In contrast to other studies (e.g., Opler and Titman (1993)), we do not find that PE targets are cash rich. The cash variable and also interaction terms of cash and growth (not reported here) are insignificant. Furthermore, the empirical results do not document that PE targets are underleveraged. The coefficient of the debt variable fails to be significant. The coefficient of  $q$  is negative but not statistically significant which indicates that PE targets do not have substantially low growth opportunities. However, we do find alternative support for the hypothesis that targets feature characteristics which make them attractive for an increase in leverage. R&D as a proxy for expected financial distress costs is significantly inversely associated with the odds of PE entry. R&D expenditures are significantly inversely related to the odds of a firm becoming subject to PE investment. Previous studies (e.g., Lichtenberg and Siegel (1990)) document that PE implement higher operational efficiency. PE's superior industry expertise could enable them to evaluate the efficiency of R&D projects. According to the empirical findings of Sorensen et al. (2008), PE increase the efficiency of patents in non-listed companies. However, the negative sign of the R&D variable suggests that the motive of cutting R&D expenditures, as part of operational engineering aimed at shareholder value maximization is unlikely. The financial distress aspect seems to be dominating.

The significant and negative coefficient of risk suggests that PE targets in our sample have stable earnings. This feature also indicates low financial distress costs and thus makes them attractive for leverage increases. Overall, we find hints for the potential of PE target firms to increase the use of debt financing which potentially reduces agency costs associated with free cash flow. Compared to HF, PE seem to address free cash flow problems more fundamentally. Whereas dividend increases can be effectuated over a short horizon, debt restructurings require a longer time horizon and can also not be reversed quickly.

Furthermore, the results document support for the hypothesis that PE create value from incentive alignment. PE invest in firms with low prior managerial equity. Apparently, PE aim at aligning interests of managers and shareholders. Managerial incentives can be aligned by compensation contracts that are strongly linked to firm performance. Changes in compensation structures are difficult to be implemented on an ad-hoc basis and are therefore consistent with the longer investment horizon of PE. Moreover, establishing a more performance oriented managerial compensation is likely to require substantial industry expertise which is also more likely to be found with PE.

In robustness checks, we control for a potential non-monotonic relationship testing the square of managerial ownership. Several authors (e.g., Morck et al. (1988)) argue that larger managerial stakes

lead to managerial entrenchment rather than alignment of interest. However, the present results do not establish a significant relationship between the odds of becoming a PE target and the square of managerial shareholdings. Further empirical results of Weir et al. (2005b) document additional support for the undervaluation hypothesis: targets are significantly younger, smaller and have poor prior stock performance. We do not find any support for the undervaluation hypothesis in terms of these variables. In contrast to the findings of Weir et al. (2005b) who analyze UK targets the incentive and undervaluation effects do not explain PE investment choices in Germany.

In terms of family shareholdings, we do not find evidence that PE avoid firms with low family stakes. The family coefficient is insignificant but positive. At first glance, this presents a contradiction to the initial hypothesis, as it was assumed that family ownership is negatively related to agency problems. A potential explanation might be the ability of PE to serve as a successor of large shareholders. Based on a survey among PE and family firms, Achleitner et al. (2008) find that when contemplating an exit, families may prefer selling their stakes to PE because of a higher selling price and the general aversion of families to sell their business to a competitor. This result is also consistent with the hypothesis that PE aim at reaching irrevocable commitments to increase the success probability of the transaction and reduce acquisition costs.

The empirical results suggest that PE entry is not driven by private benefits if we use the 'unchecked' proxy. For the private benefits reduction strategy to be profitable, an investor has to build a "counter-stake" to the dominating and rent-extracting shareholder. The dominating shareholder who extracts private benefits only tenders his stake to PE if the offer price compensates him for the loss of private benefits. As a consequence, buying out shareholders that are extracting private benefits is an unprofitable strategy. Based on information from the BaFin database and financial press, we exclude all the cases in which PE purchase the stake from the dominating shareholder. Those cases make up for about one third of the sample (18 targets). We hypothesize that, if anything, the reduction of private benefits could only be profitable in those cases. The results from model 2 show that private benefits are unlikely to drive PE investments, because the coefficient of the private benefits proxy still fails to be significant. The explanatory power of this model specification is very limited: the Chi-square test rejects the hypothesis that all tested variables are jointly insignificant only at the 10% level.

We control for various alternative investment motives. Increasing leverage may also be attractive because of tax benefits. Model 3 tests for the significance of the tax variable. The coefficient is opposite to the hypothesized direction and insignificant. This finding is replicated when using tax expenses divided by the market value of equity as an alternative measure. Hence, we do not find any support for PE targets having high tax liabilities. This finding is in line with the results of Weir et al. (2005b) and Weir et al. (2008) who do not find that high tax liabilities significantly increase the likelihood of PE investment in the UK. The value drivers of PE activities in Germany seem to stem from sources other

than tax arbitrage. This finding is not necessarily inconsistent with the results of Achleitner et al. (2009), who find that the market reaction to PE entries is driven by tax motives: an increased use of a debt tax shield may indeed increase shareholder wealth, but still the tax advantage does not represent an original investment motive.

Size and prior stock performance fail to be significantly related to the likelihood of PE entries. Both variables are related to information asymmetries. Hence, the reduction of information asymmetries does not seem to motivate PE investments.

In sum, PE strategies are characterized as follows: with stable cash flows and little R&D, PE targets are particularly well-suited for increases in leverage. Moreover, they invest in firms which are likely to exhibit agency costs due to low managerial equity and, hence, large degree of ownership-control separation.

## **6 Concluding remarks**

The present paper analyzes HF and PE target characteristics in order to investigate whether their investment strategies are driven by corporate governance improvements. Summing up, the findings indicate that the investment motives of HF and PE are both linked to free cash flow problems and incentive alignment potential. However, they pursue distinct investment strategies which can be explained by their particular business models.

HF acquire minority stakes in public companies. They are likely to aim at dividend increases and thereby mitigate free cash flow problems. Moreover, HF investment seems to be motivated by monitoring deficits: focus on firms with a lack of controlling shareholders, in particular a lack of family ownership.

In contrast, PE mostly acquire controlling stakes and aim at taking the target private accompanied by an increase in leverage. PE targets are well-suited for leverage increases because they are likely to have low expected financial distress costs. PE also appear to draw value from incentive alignment by targeting firms with low managerial shareholdings. Neither HF nor PE seem to be motivated by the reduction of private benefits.

In summary, our findings indicate that HF implement measures which mitigate agency problems and hence create wealth in the short run. PE mitigate agency problems and hence create wealth in the long run. These findings are consistent with the organizational set ups of HF and PE which imply joint incentives to improve corporate governance but differences in the time horizons and depth of changes that can be implemented.

The findings that HF and PE activities are driven by corporate governance improvements suggest a positive role from a welfare perspective. However, in the following respects, HF and PE may be detrimental to long-term welfare: HF strategies aim at creating shareholder value in the short run which

may come at the expense of the long run shareholder value if one assumes that markets are not efficient. Increasing leverage seems to be an important driver of the PE investment decision. The potential wealth transfer from stakeholders, in particular debtholders and employees, seems to be the most likely problem with respect to PE. A more comprehensive assessment therefore necessitates the analysis of the long-term consequences.

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Table 1: Generic characteristics of HF and PE

See Kaserer et al. (2007) and Bevilacqua (2007).

Characteristica	Hedge Funds	Private equity Funds
Investment focus	Variety of financial Instruments: e.g., public equity, fixed income, options, futures, convertible securities, commodities	Public and private equity
Expertise	Focus on Financial	Both financial and industrial
Investment horizon	Average initial lock up period of 10 months	Average period of 10 years
Performance based compensation	High	High
Determination of Performance	Periodically, based on the net asset value of the portfolio via marking to market	At liquidation, based on the final cash flow from the investment portfolio
Redemption	On a periodic basis	At liquidation
Admittance of new Investors	On a periodic basis	No

Table 2: Overview HF literature

Authors	Region	Horizon	Short term event study	Long term event Study	Target characteristics	Changes
Brav et al. (2008)	U.S.	2001 – 2006	Positive abnormal returns driven by requests to spin-off assets or sell the firm	No reversal of the positive announcement effects in subsequent year	Low market to book ratio, sound operating profitability, low R&D, low dividend, more takeover defenses, higher CEO pay, slightly higher leverage, more diversified	Increase in Operating performance, slight increase in leverage, decline in CEO pay, increase in CEO turnover rate
Clifford (2007)	U.S.	1998 – 2005	Positive effects, higher for activist funds, request of board seats, share buybacks, opposing a merger/planning to induce one	Positive abnormal returns over one year for activist HF	Comparison of active and passive targets: active have better operating profitability, lower market-to-book, no indication for free cash flow problems	Operating performance increases, mainly due to divestment of underperforming asset, dividend increase
Boyson and Mooradian (2007)	U.S.	1994 – 2005	Positive abnormal returns, higher for confrontational activism	Positive abnormal returns	Small targets, poor prior stock performance, low growth opportunities, sound operating performance, large cash, low dividend yield and payout ratio, low R&D	Increase in Tobin's q (decline in undervaluation), reduction in cash holdings, improved operation performance
Greenwood and Schor (2007)	U.S.	1993 – 2006	Positive returns for the announcement of asset sales and induction of takeover	Large returns is the target is ultimately take over by another firm	More likely acquisition targets, smaller, less analyst coverage and poor prior stock performance	Large fraction of targets merged with another company
Klein and Zur (2009)	U.S.	2003 – 2005	Controlling for the specific request, there is no significant difference between HF and non-HF	Positive abnormal returns	Sound operating profitability, high cash	Increase in dividend and leverage, decrease in cash
Bessler and Holler (2008)	Germany	2000 – 2006	Positive effects, higher abnormal returns compared to other entrepreneurial investors	Positive abnormal returns, inversely related to size	Active HF investments: large and liquid targets	Increase in systematic risk

Table 3: Overview PE literature

Authors	Region	Horizon	Short term event study	Premia	Target characteristics
Lehn and Poulson (1989)	U.S.	1980 – 1987	NA	Premia positively depend on cash richness and low managerial equity	Low growth, cash richness and prior takeover target
Opler and Titman (1993)	U.S.	1979 – 1989	NA	NA	Combination of low growth prospects and high cash flows, low expected financial distress costs as proxied for by R&D, high degree of diversification
Halpern et al. (1999)	U.S.	1981 – 1986	NA	For very little management ownership premia are inversely related to prior stock performance	Non-management led LBO targets receive greater prior acquisition interest, poor prior stock performance, low debt to equity ratio and low managerial equity
Weir et al. (2005b)	UK	1998 – 2000	NA	NA	Higher CEO ownership, lower prospects, less duality with respect to identity of CEO and chairman
Weir et al. (2008)	UK	1998 – 2001	NA	NA	More diversified, high asset collateralization, poor prior stock performance, quoted for shorter period of time, small size
Renneboog et al. (2007)	UK	1997 – 2003	Positive abnormal returns driven by prior stock performance, low leverage low managerial equity	Premia driven by prior stock performance, low leverage, low managerial equity	NA
Andres et al. (2007)	Europe	1997 – 2005	Positive abnormal returns driven by free float, managerial inefficiency and undervaluation; drivers on a macro level: poor protection of minority shareholders	NA	NA
Achleitner et al. (2009)	Germany	1998 - 2007	Positive reaction driven by undervaluation, little actual use of leverage and the size of tax payments	NA	NA

Table 4: Summary of hypotheses

Hypothesis	Variable	Expected sign
Free cash flow	Cash	Pos.
	Debt	Neg.
	Dividend yield	Neg.
	Tobin's Q	Neg.
	Research and development	Neg.
Ownership structure	Management ownership	Neg.
	Family ownership	Neg.
	Free float	Neg.
	Private benefits	Pos.

Table 5: Industry distribution

The table below shows the distribution of target and control firms across industries. The industry Classification is obtained from Deutsche Börse.

Industry	HF		PE		Control	
	#	in %	#	in %	#	in %
Consumer goods	6	6.3%	13	22.8%	9	9.4%
Media	13	13.5%	5	8.8%	8	8.3%
Industriais	27	28.1%	12	21.1%	18	18.8%
Pharma & Healthcare	10	10.4%	3	5.3%	9	9.4%
Telecommunication	4	4.2%	3	5.3%	2	2.1%
Technology	8	8.3%	2	3.5%	8	8.3%
Software	15	15.6%	9	15.8%	15	15.6%
Utilities	0	0.0%	1	1.8%	3	3.1%
Chemicals	5	5.2%	2	3.5%	3	3.1%
Construction	1	1.0%	1	1.8%	3	3.1%
Automobile	2	2.1%	6	10.5%	4	4.2%
Basic resources	0	0.0%	0	0.0%	5	5.2%
Retail	3	3.1%	0	0.0%	5	5.2%
Transportation & Logistics	2	2.1%	0	0.0%	4	4.2%
N	96		57		96	

Table 6: Distribution of entries over time

The table below summarizes the entry dates of HF and PE targets. The years for which data on the control sample is collected were randomly drawn from the entry dates of HF and PE.

Year	HF		PE		Control	
	#	in %	#	in %	#	in %
1998	0	0.0%	1	1.8%	1	1.0%
1999	0	0.0%	3	5.3%	3	3.1%
2000	0	0.0%	8	14.0%	5	5.2%
2001	1	1.0%	2	3.5%	0	0.0%
2002	1	1.0%	3	5.3%	3	3.1%
2003	2	2.1%	9	15.8%	11	11.5%
2004	6	6.3%	6	10.5%	10	10.4%
2005	19	19.8%	13	22.8%	24	25.0%
2006	28	29.2%	9	15.8%	20	20.8%
2007	39	40.6%	3	5.3%	19	19.8%
N	96		57		96	

Table 7: Stake sizes

The table shows the summary statistics on the stakes acquired by HF and PE. The stake size in % refers to the maximum stake which has been held over the time horizon under consideration. The euro volume is calculated as the maximum stake size multiplied by the market value of equity 20 trading days before the entry of the investor. Minority stake is defined as a stake smaller than 25% and a Controlling stake is defined as stake greater than 25%. If an investor acquires a stake greater than 30%, he is obliged to make a public offer to the remaining shareholders which is why we include information on this threshold.

	HF	PE
<i>In EUR million</i>		
Average stake size	22.6	151.2
Median stake size	7.9	44.5
Standard deviation	35.9	241.3
<i>In %</i>		
Average stake size	8.2	71.6
Median stake size	5.6	82.3
Standard deviation	6.1	30.7
<i>Stake type</i>		
Minority stake	95.8%	8.8%
Controlling stake	4.2%	91.2%
Stake over 30%	0.0%	80.7%
Stake over 75%	0.0%	54.4%
Delisting	8.3%	47.4%

Table 8: Summary statistics

The Table shows the summary statistics. All figures are indicated in %. Free float is defined as the sum of shareholdings below 5%. Family is defined as the stake in held by family members who are neither members of the executive board themselves nor related to them. Management denotes the stake that is held by members of the management board. The Private benefits dummy is set to 1 if the largest shareholder holds more than 25% and the second-largest holds less than 5%. Acquisition (target) refer to rumors that the firm plans an acquisition (is subjected to takeover speculation). Executed acquisition refers to the firm having executed an acquisition during two years before the entry. Size in terms of market value refers to the value of equity, size in terms of sales to the annual volume of sales. Risk denotes the standard deviation of returns over 250 trading days up to 20 days until the entry. Prior stock performance is defined the market adjusted share price to 20 trading days before entry divided by the market adjusted average share price of the anteceding 250 days. Q is defined as (market value of equity + book value of total liabilities)/total assets divided by the equivalent measure of the average of all firms in DAX and MDAX in the respective year. Net debt is (short term debt + long term debt – cash and cash equivalents)/total assets. Cash denotes cash and cash equivalents scaled by sales. Dividend yield is defined as the cash dividend scaled by the market value of equity. Research (dummy) is set to 1 if the firm expenses and development, 0 otherwise. Tax denotes tax expenses scaled by the sales. The columns under difference in means indicates the difference of HF targets, PE targets to control firms and HF to PE targets. We perform t-tests for the significance of the difference (Pearson’s chi square tests for dummies). \*,\*\* and \*\*\* denotes statistical significance at the 10%, 5%, and 1% level. The data have been winsorized at the 3% level.

	Mean			Median			Standard deviation			Difference in means		
	HF	PE	Control	HF	PE	Control	HF	PE	Control	HF	PE	HF vs. PE
In %												
Free float	58.01	43.20	47.13	56.20	42.00	48.64	24.59	27.04	22.69	10.89***	-3.93	14.82***
Family	3.54	15.84	13.12	0.00	0.00	0.00	7.70	25.43	23.37	-9.58***	2.72	-12.30***
Management	7.98	4.06	11.78	0.00	0.00	0.00	16.78	11.68	21.01	-3.80	-7.72***	3.92*
Private benefits (d)	33.33	57.89	52.08	0.00	100.00	100.00	47.39	49.81	50.22	-18.75***	5.81	-24.56***
Acquisition (d)	35.42	15.79	28.13	0.00	0.00	0.00	.4808	36.79	45.20	7.29	-12.34*	19.63***
Target (d)	22.92	28.07	4.17	0.00	0.00	0.00	42.25	45.33	20.09	18.75***	23.9***	-5.15
Size (MV) in EUR m	130.73	84.09	95.27	121.24	56.00	61.01	0.00	0.00	0.01	35.46	-11.18	46.63*
Size (sales) in EUR m	159.21	248.21	163.50	143.12	248.05	120.52	0.01	0.00	0.01	-4.29	84.71	-89*
Risk %	2.79	2.66	3.18	2.55	2.41	2.71	0.96	0.95	1.66	-0.39**	-0.52**	0.13
Prior stock performance in %	99.89	102.20	98.66	96.97	101.33	96.29	19.31	17.01	24.00	1.23	3.54	-2.31
Q adjusted	109.47	78.90	89.40	89.32	72.90	77.42	52.50	27.19	41.64	20.06***	-10.51*	30.57***
Debt	22.29	20.68	18.61	18.30	18.31	18.78	18.55	18.77	16.71	3.68	2.07	1.61
Net debt	3.85	8.26	1.10	7.02	8.58	5.30	32.44	28.78	29.90	2.75	7.16	-4.41

	Mean		Median			Standard deviation			Difference in means			
Cash	13.93	10.38	13.38	10.83	7.06	8.08	12.37	11.37	13.32	0.55	-2.99	3.55*
Dividend yield	0.88	2.43	2.12	0.00	1.25	0.02	1.42	4.92	4.06	-1.24***	0.30	-1.55**
Research (d)	50.00	24.56	35.42	50.00	0.00	0.00	50.26	43.43	48.08	14.58**	-10.86	25.44***
Tax	2.46	1.90	2.29	1.59	1.01	1.75	2.63	2.23	2.34	-0.39	-0.39	0.56

Table 9: Spearman correlations

The following table shows the Spearman's rank correlation coefficients of the variables. \* denotes significant correlation at the 10% level. The data have been winsorized at the 3% level.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Fam	1.00														
2 Mgmt	-0.16*	1.00													
3 Free float	-0.15*	-0.03	1.00												
4 PB (d)	-0.05	0.02	-0.29*	1.00											
5 R&D	0.08	-0.03	0.14*	0.02	1.00										
6 Risk	0.02	0.19*	0.09	0.00	-0.12*	1.00									
7 Perf	0.13*	-0.07	-0.12*	-0.05	0.03	-0.11*	1.00								
8 Size	0.00	-0.26*	-0.04	-0.01	0.06	-0.57*	0.22*	1.00							
9 Q	-0.08	0.04	0.04	-0.03	0.12*	-0.05	-0.14*	-0.16*	1.00						
10 Cash	-0.01	0.07	0.15*	-0.02	0.09	0.24*	-0.01	-0.37*	0.22*	1.00					
11 Debt	0.07	-0.12*	0.06	-0.08	-0.03	-0.07	-0.10	0.29*	-0.18*	-0.46*	1.00				
12 Dvd	0.06	-0.09	-0.14*	0.12*	0.06	-0.60*	0.15*	0.55*	-0.15*	-0.24*	0.01	1.00			
13 Tax	0.03	0.02	0.01	0.00	0.14*	-0.19*	0.24*	0.16*	0.17*	0.06	-0.19*	0.21*	1.00		
14 Acq (d)	0.11*	-0.07	0.15*	-0.05	0.17*	-0.25*	0.01	0.28*	-0.05	-0.07	0.01	0.19*	0.04	1.00	
15 Tar (d)	-0.10	-0.16*	-0.15	0.03	-0.07	-0.18*	0.24*	0.20*	-0.01	-0.04	-0.07	0.05	0.01	-0.09	1.00

Table 10: Binomial logistic regression – HF targets versus non-targets

The dependent variable is set to 1 for HF targets and 0 for non-targets. The data have been winsorized at the 3% level.  $\chi^2$  denotes the value for the likelihood chi square. z denotes the value for the z-statistics. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% level.

Variable	Model 1		Model 2		Model 3	
	Coef.	z	Coef.	z	Coef.	z
Family	-0.05	-3.44***	-0.42	-2.91***	-0.39	-2.47***
Management	-0.01	-1.44	-0.13	-1.43	-0.01	-0.58
Private benefits	-0.89	-2.62***				
Cash	1.40	0.8	0.14	0.08	0.03	0.02
Net debt	1.24	1.7*	1.06	1.45	1.28	1.66*
Tobin's Q	0.96	2.54**	0.90	2.38**	1.21	2.83***
Research	0.81	2.38**	0.66	1.94**	0.67	1.86*
Free float			0.12	1.69*	0.02	2.12**
Dividend yield			-20.62	-2.17**	-23.16	-1.94**
Size					-0.04	-0.37
Prior stock performance					0.89	1.06
Acquisition rumours					0.75	1.79*
Takeover rumours					2.05	3.22***
Intercept	-0.68	-1.37	-1.18	-1.83*	-2.69	-1.85*
Number of observations	192		192		192	
$\chi^2$	41.82***		43.48***		62.57***	
Pseudo R <sup>2</sup>	0.16		0.16		0.24	

Table 11: Binomial logistic regression – PE targets versus non-targets

The dependent variable is set to 1 for PE targets and 0 for non-targets. Model 2 tests for a subsample of PE targets and only includes those targets where PE do not purchase their stake from the largest shareholder, as in this case, private benefits are unlikely. The data have been winsorized at the 3% level.  $\chi^2$  denotes the value for the likelihood chi square. z denotes the value for the z-statistics. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% level.

	Model 1		Model 2		Model 3	
	Coef.	z	Coef.	z	Coef.	z
Family	0.00	0.51	0.00	0.1	0.00	0.07
Management	-0.27	-2.15**	-0.03	-1.76*	-0.03	-2.28**
Private benefits	0.25	0.7	-0.57	1.41		
Cash	-0.86	-0.4	-0.70	-0.29	-0.63	-0.27
Net debt	0.37	0.42	0.19	0.18	0.77	0.81
Tobin's Q	-0.62	-1.15	-0.98	-1.48	-0.78	-1.24
Research	-7.95	-1.76*	-8.21	-1.58*	-8.34	-1.81*
Size					-0.19	-1.62
Prior stock performance					0.74	0.79
Risk					-36.91	-2.09**
Tax					4.44	1.16
Freefloat					-0.00	-0.34
Intercept	0.60	0.44	0.59	0.89	3.13	1.53
Number of observations	153		135		153	
$\chi^2$	15.25**		13.92*		22.14**	
Pseudo R2	0.08		0.09		0.12	

Table 12: Summary of results

Hypothesis	Variable	HF targets	PE targets
Free cash flow	Cash	-	-
	Debt	-	-
	Dividends	Low	-
	Tobin's Q	High	-
	Research and development	High	Low
Ownership structure	Management ownership	-	Low
	Family ownership	High	-
	Free float	High	-
	Private benefits	-	-