The Effects of Private Equity-Backing in the European Acquisitions of Unlisted Companies

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First draft: January, 2010

Abstract

Using a sample of acquisitions of unlisted firms completed by public companies from 17 Western European countries over the period 2003-2008, this study investigates whether private equity (PE)-backing of acquired firms has an impact on announcement period abnormal returns to acquirers. 12.5% of the unlisted targets are PE-backed. Acquisitions of PE-backed firms are more likely to involve larger acquirers, larger targets relative to acquirer size, and high-tech targets; they are more likely to occur in an unrelated industry and to be partially stock-financed. Of most importance for this study, I find that the presence of PE investors in the targets leads to significantly lower acquirer announcement returns. This effect remains after controlling for a large set of deal and acquirer characteristics. Moreover, these results are robust to the use of a propensity score matching method on multiple deal characteristics and suggest that PE investors increase the negotiating power of target shareholders.

Keywords: Private Equity, Acquisitions, Acquirer Returns, Unlisted Targets
JEL Classification: G34, G24

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1. Introduction

In this paper, I explore the impact that private equity-backing of acquired firms has on the characteristics of acquisitions of unlisted firms by public companies. More specifically, I address the impact of PE-backing on announcement period abnormal returns to acquirers. Many empirical studies in corporate finance have analyzed the determinants of acquirer abnormal returns around acquisition decision announcements. The relative size of the deal, the public or private status of the target, the uncertainty about target valuation, and the means of payment are among the most important determinants. This paper focuses on the status of the target. Since the 1970's, academic research has demonstrated that acquiring shareholders of publicly traded targets earn neutral or negative returns around acquisition announcements (Andrade et al. 2001). However, many recent studies have reported average positive announcement returns to acquirers of unlisted firms (Chang, 1998; Faccio et al., 2006; Fuller et al., 2002; Moeller et al., 2004). The objective of this paper is to re-examine the role of the status of the target in acquirer returns by separating targets that received private equity-backing from targets with traditional private shareholders. Do acquisitions of private equity-backed targets trigger a different price reaction for acquirer shareholders than acquisitions of non-private equity-backed targets?

The term "Private Equity" (referred to as PE in the remainder of the paper), does not have the same meaning in Europe as it does in the U.S. In the U.K. and in Continental Europe, it always refers to the industry as a whole, including both venture capital and buyout investments, while in the U.S. it is usually used for buyout deals only. For the purpose of this research, PE investors are defined in a broad sense including both investors in venture capital (henceforth, VC) and buyouts transactions. Both types of investors share unique attributes that distinguish them from traditional shareholders and that should influence the sale process of unlisted firms. Moreover, a large number of investments in Europe are made by PE firms investing in VC as well as in buyout deals.

Academic research to date has shown that VC/PE investors have specific capacities. In particular, VC/PE investors are in a position to certify the true value of a firm (Megginson and Weiss, 1991). They also develop strong capabilities in building large networks of contacts (Hochberg et al., 2007; Ivashina and Kovner, 2008). Both attributes may result in better negotiating capacities and suggest that PE investors could act, during the sale process, in ways that traditional investors may not be able to replicate. This makes understanding the impact of

PE-backing on the profitability of unlisted target acquisitions an interesting empirical question.

I use a sample of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. Through a process of manual identification, I find that 12.5% of the target companies are PE-backed. I classify an acquisition as PE-backed if the target company received PE-funding in the past and I also require that at least one of the PE investors that provided funding in the past is still involved in the target when the public company buys it. PE investors are unlikely to have any impact on the sale process if they have exited the target company before the acquisition deal. The results indicate that acquisitions of PE-backed companies differ from other unlisted acquisitions. They are more likely to involve larger acquirers, larger targets relative to acquirer size, and high-tech targets; they are more likely to occur in an unrelated industry and to be partially stock-financed. When I turn to the impact of PE-backing on acquirer cumulative abnormal returns (thereafter, CARs), I observe that the market reacts significantly less positively to the announcement of an acquisition of a PE-backed company. The mean (median) CARs for announcements of acquisitions of PE-backed targets are 1.12% (0.45%), which is significantly lower than the mean (median) CARs of 2.11% (0.97%) for acquisitions of non-PE-backed targets. The "PE-backing effect" remains after controlling for a large set of deal and acquirer characteristics, which have been shown to be significant in explaining acquirer returns in prior literature. Additionally, I use a propensity score matching method to select a matched sample of acquisitions of non-PE-backed firms that are comparable to acquisitions of PE-backed firms in a wide range of characteristics in which the two groups differ in the initial sample. Using the matched sample of non-PE-backed targets, I confirm that the presence of PE firms in the targets lowers returns to acquirers.

The contributions of this paper are threefold. First, to the best of my knowledge, this is the first paper to analyze the impact that PE-backing has on the returns to acquirers of unlisted firms in Europe. Results to date focus on the U.S market only, are very rare, and appear to be conflicting (Gompers and Xuan, 2006; Masulis and Nahata, 2009[2]). Second, this paper sheds new light on how VC/PE investors manage and influence the exit process of their portfolio companies. Starting with Megginson and Weiss (1991), a number of studies investigate the role played by VC/PE investors during the initial public offerings process and report their certification capacity. Analyses of the role of PE investors in trade sales are almost

[2] Additionally, both papers focus on VC-backing. Because, VC constitutes a subset of the entire PE in the economy, those papers are not perfectly comparable to my study.

nonexistent. However, they are particularly necessary as trade sales of portfolio companies are by far the largest exit routes in Europe. In 2008, according to the European Private Equity and Venture Capital Association (EVCA), trade sales comprised approximately 40% of PE exits (by amount) undertaken by PE firms based in Europe, while divestments by public offerings (initial public offerings and sale of quoted equity) continued to fall, representing only 5% of total divestment. The results are consistent with PE investors increasing the negotiating power of target shareholders when portfolio companies are sold through trade sales, which results in acquirers paying a higher price when they buy PE-backed targets. Last, this paper adds to the rare evidence on returns to European acquirers of unlisted firms. I observe mean positive CARs for acquirers of unlisted firms, which is consistent with the findings in Conn et al. (2005) and Faccio et al. (2006).

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the sample construction methodology. Section 4 defines the variables and Section 5 describes the sample. Section 6 provides univariate and multivariate analyses of acquirer returns. In Section 7, a propensity score matching approach is exposed as a robustness check. Section 8 offers conclusion and suggestions for future research.

2. Related Literature

This paper is related and contributes to different strands of the literature. First, a number of recent papers examine the effect of unlisted target acquisitions on acquirer returns. They show that acquirers achieve zero or negative average announcement period cumulative abnormal returns (CARs) when acquiring listed targets and positive average CARs when acquiring unlisted targets (Chang, 1998; Fuller et al., 2002; Moeller et al., 2004). This phenomenon is also observed in Europe. Faccio et al. (2006) find on a sample of acquisitions in 17 Western European countries over the period 1996-2001 that acquirers of listed targets earn an insignificant average abnormal return of -0.38%, while acquirers of unlisted targets earn a significant average abnormal return of 1.48%. Although the fundamental factors that explain this “listing effect” remain elusive (Faccio et al., 2006), Fuller et al. (2002) posit that one explanation for the differing market reaction is that acquirers receive a better price when they buy unlisted firms. Officer (2007) actually documents discounts for acquisitions of unlisted targets that average 15% to 30% relative to multiples paid to acquire comparable publicly traded firms.

Second, the paper is related to the large body of literature on the certification role of VC/PE. Empirical support for this certification role of VC/PE investors has essentially been provided in initial public offerings (henceforth, IPO) settings. Megginson and Weiss (1991) find that underpricing in VC-backed IPOs is significantly lower than in non-VC-backed IPOs, which is consistent with the idea that venture capitalists certify that the offering price of the issue reflects all available and relevant inside information. VC-backed IPOs experience better long-run performance than non-VC-backed IPOs (Brav and Gompers, 1997). The certification role that venture capitalists play in the IPO process has however been questioned. Lee and Wahal (2004) observe that VC-backing results in higher IPO underpricing after controlling for endogeneity in the receipt of venture funding. Lee and Masulis (2008) show that neither VC investment, nor backing by more reputable venture capitalists, significantly restrain earnings management by IPO issuers, which is inconsistent with them implicitly certifying the quality of issuers' financial reporting.

The first condition for third-party certification to be believable for outside investors is that the certifying agent has reputational capital at stake on not selling overvalued assets (Megginson and Weiss, 1991). Because European PE investors repeatedly exit their portfolio companies through trade sale (as mentioned earlier, according to the EVCA, trade sales are by far the largest exit routes in Europe accounting for approximately 40% of PE exits), they have a very strong incentive to maintain access to the trade sale market on good conditions and therefore have to establish a reputation for honesty. According to Megginson and Weiss (1991), the value of the reputational capital must exceed the maximum possible benefit which could be obtained by certifying falsely and the services of the certifying agent must be costly for the firm. These authors show that both conditions are met by venture capitalists when exiting through an IPO. There is no reason to believe that they are not met when VC/PE investors exit through a trade sale. Last, certification by PE investors is feasible because they continuously monitor their portfolio companies, notably through participation at the board level (Lerner, 1995). PE investors therefore have means of reducing the information asymmetry faced by acquirers of private firms. Moreover, because PE firms specialize in exiting private investment, they are expert in pricing.

Third, many papers highlight the importance of networks in the VC/PE industry. Venture capitalists lean on their networks of contacts to help the company succeed (Gorman and Sahlman, 1989; Sahlman, 1990). The bank relationships of PE firms help to lower leverage buyouts loan spread (Ivashina and Kovner, 2008). Influential network positions developed through syndication of investments make PE firms perform significantly better

(Hochberg et al., 2007). PE firms' extensive network of contacts should therefore help them in locating potential acquirers and, hence, increase the bidding competition. Competition in an acquisition decreases the returns to acquirers (Bradley, Desai, and Kim, 1988)

Both certification skills and network capacities of PE investors should result in better price negotiating power and PE firms should obtain high prices for their companies. Because the market may view PE investors as good negotiators, I expect acquirers of non-PE-backed targets to perform relatively better than acquirers of a PE-backed target. Announcement of PE-backed firm acquisitions should have a negative impact on acquirer returns.

Only recently has the literature considered the effects of PE-backing on acquisition acquirer announcement returns. Gompers and Xuan (2006) find that the market reacts less positively to the announcement of the acquisition of a VC-backed firm, while the results of Masulis and Nahata (2009) indicate the opposite direction after using a propensity score matching approach. While Gompers and Xuan (2006) attribute the smaller returns to the view that venture capitalists have a greater price negotiating ability or that the adverse selection problem is quite high, Masulis and Nahata (2009) suggest that their findings are the result of venture capitalists having interests which conflict with other investors. However, because, venture capital constitutes a subset of the entire PE in the economy, those papers are not perfectly comparable to this study. Additionally, they focus on the U.S. market only.

3. Sample Selection

I use a two-step methodology to construct the sample. First, I obtain a sample of acquisitions of unlisted targets by European public acquirers. Second, I disentangle deals involving PE-backed targets from other unlisted deals.

a. Acquisitions of Unlisted Targets by European Public Acquirers

From Thomson Financial's Mergers and Acquisitions database (hereafter referred to as the "M&A database"), I construct a sample of acquisitions of unlisted targets completed by European public acquirers. To be included in the sample, the following conditions must be satisfied:

- Acquirers are public companies.

- Targets are unlisted companies[3].
- Completed deals are announced and effective between January 1, 2003 and December 31, 2008.
- Nation of the acquiring companies includes 17 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Republic of Ireland, Luxembourg, Norway, Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom). No restriction is imposed on the targets country of incorporation.
- Acquirers are listed on a stock market in one of the above listed European countries. Acquirer stocks have 3 days of return data available in Datastream around the takeover announcement date and have no more than 50% missing returns over a window of 240 days starting 40 days before the announcement day[4].
- Buyers acquire 100% of target firm shares. The deal value is one million U.S. dollars or more and represents at least 1% of the acquirer's market value of equity[5].
- Neither the acquirer nor the target is a financial institution or a utility or a government-related company or a real estate-related firm (this restriction avoids dealing with the special regulatory environment and accounting issues related to these sectors).

Then, I construct a second sample including all transactions completed by the acquirers of the above primary sample with a disclosed deal value of more than one million U.S. dollars. Contrary to the primary sample, this sample also includes acquisitions of public firms. The primary sample is necessarily included in the second sample. Any transaction occurring less than one month after another acquisition made by the same acquirer is classified as "multiple acquisition". When an acquiring firm announces two acquisitions or more on the same day, all these observations are considered as "multiple acquisitions". Next, every transaction of the primary sample that corresponds to a "serial acquisition" in the second sample is excluded from the primary sample because multiple acquisitions raise the

[3] Unlisted companies include private firms and subsidiaries.
[4] As explained later, this window serves as the estimation period for the event study in this paper. Returns are computed as "weighted trade-to-trade returns".
[5] To avoid problems with outliers, when computing the relative deal size, I exclude the few observations with a relative size equal to or above 3.

problem of dependent observations due to overlapping observations. This initial screening gives 2033 acquisitions of unlisted targets.

b. Acquisitions of Unlisted PE-backed Targets by European Public Acquirers

The next step consists of disentangling deals involving PE-backed targets from other unlisted target acquisitions. Because there are no common identifiers for linking companies listed in the M&A database and the VentureXpert database, I manually search for the 2033 target names extracted from the M&A database in the VentureXpert database. I use the whole VentureXpert database, including operations from 1970 to 2008, with no country, nor amount restrictions. I do consider the match only in case the company has received PE financing before the acquisition date mentioned in the M&A database. When no match is found for a given target name, I repeat the search by substituting the target name extracted from the M&A database for its immediate parent name (whenever relevant and only in case this immediate parent is not public). I find that 275 companies of the initial sample have received PE financings prior to being subject to an acquisition by a listed company (directly or through an immediate private parent).

Second, I check whether PE firms are still active investors in the company at the time of the M&A transaction. 91 out of these 275 deals involve a sellside financial sponsor pointed out by the M&A database[6]. I verify that the financial sponsor mentioned by the M&A database matches with the one extracted from the VentureXpert database. For the remaining 184 deals, I manually check in press releases and/or on investors' websites that at least one of the referred PE investors is still involved in the target at the time of the M&A transaction. I find out that 134 acquisitions involve a PE-backed target (or target immediate parent). Targets are not anymore PE-backed at the time of the M&A in 27 cases. In 23 cases, I am not able to conclude, and thus decide to exclude these deals from the sample for avoidance of bias. At this point, I have identified 225 acquisitions of PE-backed firms.

The M&A database identifies 26 additional deals involving a sellside financial sponsor that have not been found in the match with the VentureXpert database. After checking in press releases and/or on investors' websites that PE firms are still active investors in the

[6] The M&A database flagships point out transactions with the seller, immediate or ultimate parent of target, immediate or ultimate parent of seller, being a "Financial Sponsor". Financial sponsors are defined as companies that engage in private equity or venture capital transactions using capital raised by investors.

company at the time of the M&A transaction, I also classify these transactions as involving a PE-backed target.

To sum up, the final sample consists of 251 acquisitions of PE-backed targets and 1759 acquisitions of non-PE-backed targets over the period 2003-2008.

4. Definition of Variables

The purpose of this paper is to understand if PE-backing influences returns to acquirers and the construction of the key explanatory variable, the *PE-Backed Target* indicator, has been explained in detail above. In this section, I discuss the construction of all the other variables used in this study. First, I explain how I compute acquirer announcement period returns. Next, I consider two categories of variables, which have been shown to be significant in explaining acquirer returns in prior literature, i.e. deal- and acquirer-specific characteristics.

a. Acquirer announcement period returns

I measure acquirer returns by computing market model adjusted stock returns around initial acquisition announcements. I obtain the announcement dates from Thomson Financial's Mergers and Acquisitions (M&A) database. I compute 3-day cumulative abnormal returns (CARs) during the window [−1, +1], where event day 0 is either the day of announcement or the first trading day following the announcement if the announcement occurs on a non-trading day.

For each observation in the sample, I use the market model to estimate normal returns: $R_{jt} = \alpha_j + \beta_j RM_t + \varepsilon_{jt}$, where R_{jt} is the observed dividend adjusted return for firm j on day t, RM_t is the relevant country stock market index return, α_j and β_j are, respectively, the estimated OLS regression intercept and slope, and ε_{jt} is a regression residual.

Returns on the share and on the market index are measured between days on which the share was traded. Using trade-to-trade returns gives correct conclusions for all level of trading frequency (Maynes and Rumsey, 1993), while most methods are misspecified as tests for detecting abnormal returns when stocks trade infrequently. The returns for interval t are divided by the square root of the number of days in the interval in order to correct for the fact that larger intervals will tend to give rise to larger returns.

The model parameters are estimated using OLS regressions over a period of 240 days, starting 40 days prior to the event window. I also require that trade-to-trade returns are available in more than 50% of the days of the estimation period.

b. Deal- and Acquirer-Specific Characteristics

The literature has shown that a number of deal and acquiring-firm characteristics are related to acquirer announcement returns in the U.S. While most of the evidence on these determinants is based on public acquisition samples, studies related to unlisted target acquisitions include these determinants as control variables and sometimes confirm the relation reported for public acquisition samples.

First, many studies on U.S. acquisitions indicate that acquirer announcement returns increase in relative deal size. This positive effect is observed by Asquith et al. (1983) on a sample of public acquisitions and by Moeller et al. (2004) on data including both public and unlisted targets[7]. The results of Fuller et al. (2002) and Masulis and Nahata (2009) indicate the same positive relation when targets are unlisted. Following the literature, I define *Relative Size* as the ratio of deal value to acquirer market value of equity. Deal value is the total value of consideration paid by the acquirer, excluding fees and expenses (in million U.S. dollars). Acquirer market value of equity is measured as of 20 trading days before the announcement (see Appendix for data definitions and sources).

Synergies between the acquirer and the target are expected to be higher for focus-increasing transactions than for diversifying transactions. Morck et al. (1990), Maquieira et al. (1998) and Moeller et al. (2004) find evidence that acquirer abnormal returns are higher in within-industry acquisitions than in diversifying acquisitions. Although the results for unlisted target acquisitions do not seem supportive of a focus-increasing effect on acquirer returns (Fuller et al., 2002; Masulis and Nahata, 2009), I include a *Within-Industry* dummy, which takes the value of 1 if the acquirer's and the target's primary two-digit SIC code coincide, 0 otherwise.

While higher returns may be expected in cross-border deals rather than in domestic acquisitions due to the internalization of synergies based on intangible assets, several factors point in the reverse direction, such as the difficulties in managing the post merger process due to regulatory and national cultural differences (see Conn et al. (2005) for a literature review).

[7] However, the authors show that the reverse is true for their subsample of large acquirers.

Fuller et al. (2002) show that U.S. acquirers of private targets have lower acquirer returns when buying a foreign firm (this result does not hold for acquirers of public or subsidiary targets). The *Cross-Border* indicator equals 1 if the acquirer's and the target's home country differ, and is 0 otherwise.

To proxy for the uncertainty of target valuation, I use a high-tech industry classification[8]. Due to the importance of human capital and intellectual property at these companies, acquirers may face more uncertainty and the market may react more negatively to acquisitions of high-tech firms. The indicator variable *High-Tech Target* denotes whether the target belongs to a high-tech industry, which are defined following Loughran and Ritter (2004) and Ljungqvist and Wilhelm (2003).

The method of payment is associated with different effects on acquirer returns in acquisitions of public versus private firms. Acquirer returns associated with stock deals are more positive than those associated with cash deals for the acquisitions of private firms, while the literature on acquisitions of public targets show that stock deals trigger more negative abnormal returns (Chang, 1998, Fuller et al., 2002; Travlos, 1987). Because there are frequent inconsistencies between the field reporting descriptive information about the method of payment and the field reporting the method of payment variable in the M&A database, I hand collect data using descriptive information reported in the M&A database. The variable *Stock* takes the value of 1 for deals which are at least partially stock-financed, 0 otherwise.

A number of acquirer characteristics have also been shown to impact acquirer returns in the U.S. Notably, acquirer size, Tobin's Q, and leverage influence the price reaction.

Larger acquirers earn lower announcement returns than do smaller acquirers (Moeller et al., 2004; Masulis et al., 2007), which is also true for unlisted target acquisitions (Gompers and Xuan, 2006). I include *Log Acquirer Size*, which is the logarithm of acquirer market value of equity, measured 20 trading days before the announcement.

Lang et al. (1989) and Servaes (1991) show that a high Tobin's Q increases acquirer returns. A low Tobin's Q might indicate poor quality of the acquiring firm's management and might therefore reduce acquirer returns. However, proxies for q have a negative significant coefficient with an economically trivial effect or an insignificant coefficient for samples including both public and unlisted targets or unlisted targets only (Moeller et al., 2004; Masulis et al., 2007; Masulis and Nahata, 2009). I measure *Acquirer Q* as the ratio of the book value of acquirer's assets minus book value of equity plus market value of equity over the

[8] The market-to-book ratio is often used as a proxy for uncertainty when targets are listed but is unavailable here.

book value of assets. Book values are as of last fiscal year-end prior to deal announcement. The market value of equity equals the acquirer size defined above.

Leverage provides incentives for managers not to engage in value-destroying acquisitions and should prevent them from empire-building. Leverage might therefore have a positive effect on acquirer returns. Maloney et al. (1993) document a positive relation between acquirer price reaction and its preannouncement leverage situation. Contrary to these authors, Moeller et al. (2004), Masulis et al. (2007), and Masulis and Nahata (2009) find an insignificant impact of leverage on acquirer returns. *Acquirer Leverage* is defined as the ratio of the acquirer's total debt to total assets as of last fiscal year-end prior to deal announcement.

Empirical event studies on returns to acquirers of unlisted targets in Europe are rare. For instance, Faccio et al. (2006) find that the method of payment, the acquirer size, and the relative size of the deal[9] have a significant effect on returns to acquirers of unlisted acquisitions, while the cross-border, within-industry and acquirer Tobin's Q variables are insignificant. Last, Faccio et al. (2006) observe that U.K. acquirers achieve lower announcement returns than do acquirers from other Western European countries. To control for the possibility that acquisitions by firms of English legal origin could overwhelm the results from other countries, I include a dummy *Acq_EnglishLT* indicating whether the acquirer is from a country with an English legal tradition (La Porta et al. 2000), i.e., in the context of this paper, from Republic of Ireland or the United Kingdom.

5. Sample Characteristics

Table I presents summary statistics of sample acquisitions by announcement year. There is some variation in the number of acquisitions across years. The numbers increase through time before declining in 2008. The percentage of all acquisitions that involve PE-backed targets is steady around an average of 12.5%. Table I also reports annual mean and median acquirer size (market value of equity), deal value, and relative deal size. Mean and median transaction values are much larger for acquisitions of PE-backed firms, both in dollar value and relative value (as a percentage of acquirer market value of equity). This pattern is observed each year (at the exception of a slightly lower mean deal value in 2007 and a lower mean relative deal size in 2006). Acquirers of PE-backed targets are much larger than those of non-PE-backed targets (although the reverse is true in 2008 in terms of mean size).

[9] The magnitude of the coefficient of the relative size variable is however trivial.

Table II gives the frequency distribution of acquisitions by home country of the acquirer and the target. The sample is dominated with acquisitions by U.K. firms (55.7% of the whole sample; 47.0% of the acquisitions of PE-backed firms). This result is in line, although the frequency here is a little bit lower, with the proportion of U.K. acquirers of unlisted companies in Europe found by Faccio et al. (2006). 22.3% of the targets are from outside Western Europe, essentially from the U.S. (13.8% of the total sample). Table III lists the corresponding local stock market indexes and currencies (based on acquirer country of listing).

Table IV reports summary statistics divided according to whether the targets are PE-backed or not. The table indicates the significance for differences in characteristics across the two acquisition samples, using a standard t-test for differences in means as well as a Wilcoxon-Mann-Whitney rank sum test for differences in medians. Panel A contains deal-specific data while Panel B concentrates on the characteristics of acquiring firms. First, I comment on the characteristics of the whole sample. Next, more importantly for the purposes of this investigation, I compare the acquirer- and deal-specific characteristics across the two groups of acquisitions.

The sample median relative deal size is 6.9%. Faccio et al. (2006) report a similar figure for their subsample of European unlisted target acquisitions. However, compared to my sample, their median acquirer size is approximately twice as large. The difference is likely to be due to their filter requiring the deal value to be at least 5 million U.S. dollars (while, following the literature, I use a 1 million U.S. dollars threshold). Acquirers in my sample are very similar to acquirers in Faccio et al. (2006) in terms of their Tobin's Qs and also have the same frequency to engage in international transactions (c. 50%). I find that 60% of the transactions are "within-industry" acquisitions. This frequency is not comparable to the portion reported in Faccio et al. (2006) which is based on a three-digit SIC code matching, but is identical to the frequency reported for unlisted acquisitions in the U.S. (Gompers and Xuan, 2006). Last, the portion of the deals that include at least some payment component in stock is very small (22.8%). The vast majority of the deals are exclusively paid for with cash, which is a characteristic of European deals (Faccio and Masulis, 2005).

Turning to the comparison of the characteristics across the two subsamples, I find that acquisitions of PE-backed companies significantly differ from other unlisted acquisitions. First, the mean and median deal values (both in dollar value and relative value) are significantly larger when a PE-backed target is involved. In absolute value, acquisitions of PE-backed targets are, on average, almost twice as large as other unlisted acquisitions. The

largest acquisition of a PE-backed target is, however, more than three times smaller than the largest acquisition of a non-PE-backed target. Acquirers of PE-backed targets are much larger, have slightly higher Tobin's Qs, and are more likely to engage in international transactions as well as in the acquisitions of high-tech firms. They are less likely to be from countries with an English legal tradition. However, the two subsamples do not differ significantly in the proportion of deals that are at least partially stock-financed, nor in the acquirer leverage, or in the frequency of within-industry acquisitions.

Gompers and Xuan (2006) and Masulis and Nahata (2009) compare the characteristics of acquisitions of VC-backed targets to other private acquisitions in the U.S. Even though these papers focus on VC-backing rather than on PE-backing, some patterns turn out to be very similar to what I have reported above. First, in both Gompers and Xuan (2006) and Masulis and Nahata (2009), the deal values and acquirer sizes are much higher for acquisitions of VC-backed targets than for acquisitions of non-VC backed targets. Relative sizes are also higher for VC-backed acquisitions although the differences between the subsamples are less pronounced and significant than in my sample[10]. Next, Gompers and Xuan (2006) report that acquirers of VC-backed targets have higher Tobin's Qs (these authors however report a larger difference between their two subsamples than I do). Masulis and Nahata (2009) find a higher portion of high-tech targets among acquisitions of VC-backed firms. However, in their sample nearly 72% of VC-backed targets belong to technology intensive industries, while I report a frequency of high-tech firms of 27.5% among PE-backed targets. This may be explained by the strong focus of venture capitalists in the high-tech sector, particularly in the U.S, but a much lower interest in this sector by the PE industry as a whole. While I do not observe a significant difference in the proportion of deals involving stock as the acquisition currency across the two acquisition subsamples, U.S. acquisitions of VC-backed targets involve much more frequently stock payment than acquisitions of other private targets (Masulis and Nahata, 2009).

In Table V, I explore the combined effect of the above deal and acquirer characteristics in a multivariate setting. I estimate a logistic model predicting whether a deal involves a PE-backed or a non-PE-backed target. The dependent variable is the *PE-backed Target* indicator. Independent variables include the acquirer- and deal-specific characteristics defined in section 4.Taken together, the acquirer size and relative deal size also account for

[10] Median relative sizes reported by Gompers and Xuan (2006) for acquisitions of VC-backed and non-VC-backed companies are respectively roughly the same as the ones I find in my two subsamples. However figures are not comparable to the relative sizes reported by Masulis and Nahata (2009) because these authors require that the relative size is at least 10% for a transaction to be included in their sample.

the deal size; hence, I exclude the deal size variable in the regression. The results confirm that, compared to other unlisted acquisitions, acquisitions of PE-backed targets are significantly more likely to involve larger targets relative to acquirer size, as well as to concern high-tech targets and larger acquirers. Deals involving PE-backed targets are also significantly more likely to be diversifying transactions and to be, at least partially, stock-financed (while both coefficient were not significant in the univariate comparison, the sign of the differences between the two sub-samples was the same). In this multivariate setting, the indicators for cross-border deals, acquirer Tobin's Qs, and acquirer English legal tradition become insignificant. Leverage remains insignificant.

6. Empirical Results on the Effects of PE-Backing on Acquirer Returns

a. Univariate Analysis of Acquisition Returns

First rows in Table VI reports mean and median three-day cumulative abnormal returns (CARs) for acquirers of unlisted firms, and separately for acquirers of PE-backed targets and for acquirers of non-PE-backed targets. The European market reacts favorably to the acquisitions of unlisted companies with acquirers earning on average a 1.99% positive CAR. The mean positive CAR for acquirers of unlisted firms is consistent with previous studies both in the U.S and Europe (Chang, 1998; Faccio et al., 2006; Fuller et al., 2002; Moeller et al., 2004). Univariate tests indicate that the market reacts significantly less positively to acquisition announcements of PE-backed companies. The mean (median) CAR for acquisition announcements of PE-backed targets is 1.12% (0.45%), which is significantly lower than the mean (median) CAR of 2.11% (0.97%) for acquisition announcements of non-PE-backed targets.

Table VI then tabulates acquirer mean and median three-day CARs for each backing status (PE, non-PE) across different subsamples based on deal and acquirer characteristics (Panel A and Panel B, respectively). For continuous variables, the sample is divided into two groups whether the variable takes a value which is above (high) or below (low) the median.

Mean and median CARs are always lower for acquirers of PE-backed firms than for acquirers of non-PE-backed firms, regardless of the subsample. The magnitude and significance of the difference in mean and median CARs are, however, varying across subsamples. For instance, the first rows of Panel A indicate that the differences in CARs are statistically significant for larger deals (both in dollar value and relative value), but are not

significant for smaller transactions even if the magnitude of the differences in CARs between the two subsamples (PE-backed, non-PE-backed) remain important in value.

b. Multivariate Results of Acquisition CARs

The previous results analyze returns to acquirers using univariate comparisons and appear to demonstrate that the market, while reacting positively to acquisition announcements of PE-backed targets, reacts significantly less favorably than to acquisition announcements of other unlisted firms. In this section, I perform multivariate tests to determine whether the "PE-backing effect" subsists to the inclusion of a panel of independent variables.

In Table VII, I estimate models using OLS regressions where the dependent variable is the acquirer 3-day CAR. Independent variables include the *PE-backed Target* indicator as well as the acquirer- and deal-specific characteristics defined in section 4. Taken together, the acquirer size and relative deal size also account for the deal size; hence, I exclude the deal size variable from the regressions. Regression (1) in Table VII is the basic specification run to investigate the effect of PE-backing on acquirer CARs. Regression (2) varies the basic specification by including year and industry dummies based on two-digit acquirer SIC code, whose coefficients are not reported for brevity. In regression (3), I use the same specification as in regression (2) except that I add indicators for English, German, French, and Scandinavian acquirer legal systems (La Porta et al., 2000) as well as interaction terms between these legal code indicators and the *PE-Backed Target* indicator (I also eliminate the intercept term). Regressions (4) and (5) in Table VII replicate the specification of regression (2) but differ from it due to the sample used, as defined hereafter.

Consistent with the univariate results from the previous section, regression (1) shows that acquirer CARs are significantly lower when the target is PE-backed. The coefficient of the *PE-backed Target* indicator is negative and highly statistically significant (p-value<0.001). The "PE-effect" is robust to the inclusion of variables that have been shown to be significant in explaining CARs in prior literature. In regression (2), the indicator *PE-backed Target* continues to be negative and highly statistically significant (p-value<0.01). In both regressions (1) and (2), the *Relative Size*, *Acquirer Size*, and *Acq_EnglishLT* indicators are significant. Consistent with prior studies on unlisted transactions in the U.S. (Fuller et al., 2002, Masulis and Nahata, 2009), the coefficient of the relative deal size is positive and significant. Further, the coefficient of the acquirer market value of the equity (i.e., acquirer size) is negative and significant, as evidenced in Masulis and Nahata (2009) and in Faccio et

al. (2006) for unlisted target acquisitions in the U.S. and in Europe, respectively. Acquirers from a country with an English legal tradition achieve lower announcement period CARs than do continental European acquirers, in line with the results of Faccio et al. (2006). The coefficient of the *Within-Industry* variable is surprisingly negative and significant in regression (1). It becomes, however, insignificant when controlling for industry and year effects, which is consistent with Fuller et al. (2002), Masulis and Nahata (2009), and Faccio et al. (2006) finding no significant synergy expectation effect on returns to acquirers of unlisted firms. Last, regression (2) shows that acquirers of firms that belong to technology intensive industries achieve higher CARs. None of the other independent variables is significant at the 0.10 level.

Regression (3) in Table VII assesses whether the market perception of the role of PE investors substantially differ across acquirer legal systems. I find that all the interaction terms are negative. Further, all interaction terms are significant except for the Scandinavian acquirers. This suggests that, acquisitions of PE-backed companies generate a significant smaller wealth increase for shareholders than do acquisitions of non-PE-backed firms, regardless of the quality of investor protection provided by legal systems. The results on the other independent variables are unchanged from regression (2).

Because no restriction has been imposed on the targets country of incorporation, the whole sample includes targets from various origins; almost one fourth of the deals involve a target from outside Western Europe. I want to check if my prior results could be affected by the heterogeneity in target origins. Hence, regression (4) is run on a subsample including transactions in which targets are from Western Europe only. Moreover, privately held firms are typically much smaller than publicly traded acquirers. The whole sample thus includes many acquisitions of very small targets compared to the size of their acquirers. In these deals, acquirer CARs are likely to be small. Some authors require the target size to be at least 10% of the acquirer size for the transaction to be included in their sample (Masulis and Nahata, 2009). Regression (5) uses only those transactions in which the relative size of the target compared to the size of acquirer is at least 10%. In regressions (4) and (5), the coefficient of the *PE-Backed Target* indicator is still negative and statistically very significant (p-value< 0.01). The “PE-backing effect” holds on both subsamples. The magnitude of the coefficient is even higher when I focus on acquisitions of larger targets. The results on the other independent variables are unchanged from previous regressions, except that *Acquirer Size* and *Acq_EnglishLT* become insignificant for European targets and for large acquisitions respectively.

Overall, across all specifications in Table VII, the coefficient of the *PE-Backed Target* indicator is negative and statistically very significant indicating that the presence of PE firms in the targets lowers returns to acquirers. The results in Table VII are consistent with the certification and negotiating role of PE investors in the sale process.

7. Robustness Check: A Propensity Score Matching Approach

As discussed in section 5, acquisitions of PE-backed companies significantly differ from other unlisted acquisitions. They are significantly more likely to involve larger targets relative to acquirer size, as well as to concern high-tech targets and larger acquirers. They are more likely to be diversifying transactions and to be, at least partially, stock-financed (see Table V). Because these differences may be responsible for differences in CARs and may bias the estimates based on OLS discussed in section 6, I address this selection concern.

I use a propensity score matching procedure to create a sample of non-PE-backed targets that is comparable to the PE-backed sample across the above characteristics. Many recent studies employ such a matching method in corporate finance (Villalonga, 2004) and more specifically in PE/VC settings (Masulis and Nahata, 2009; Lee and Wahal, 2004; Lee and Masulis, 2008).

The first step in the propensity score matching procedure is to compute the estimated likelihood of an acquisition involving a PE-backed target on the sample of all unlisted targets. In regression (1) of Table VIII, I re-estimate the logistic model predicting whether a deal involves a PE-backed or a non- PE-backed target used in section 5, however suppressing the independent variables that have been found to be insignificant in section 5.

I compute the propensity score (or estimated probability of a deal to involve a PE-backed target) for each transaction of the initial sample from the coefficient estimates reported in regression (1) of Table VIII combined with each transaction's regressor values. Propensity score is available for 249 acquisitions of PE-backed targets and 1759 acquisitions of non-PE-backed targets. Next, I define quartiles (or blocks) of the propensity score distribution for acquisitions of PE-backed firms. Acquisitions of non-PE-backed firms are stratified into one of the block defined above[11]. Within each block, I check for each variable specified in the logistic regression (including the propensity score itself) whether the differences in means between the sample of acquisitions of PE-backed firms and the sample of acquisitions of non-

[11] I discard all acquisitions of non-PE backed firms with an estimated propensity score lower (higher) than the minimum (maximum) of the propensity score for acquisitions of PE-backed firms.

PE-backed targets are significant or not. If all blocks are well balanced, i.e, if the t-statistics are not significant for most variables, the procedure ends. However, if a block is not well balanced, the block is divided into two finer blocks. Ultimately, the sample is divided in 10 blocks.

Next, I pair each acquisition of a PE-backed target with the deal involving a non-PE-backed target with the nearest propensity score (in absolute value and without replacement) within the same block. I also require that the selected matched deal has the same three-digit SIC codes if possible, otherwise the same two-digit SIC codes (if the preceding is unavailable), or ultimately the same one-digit SIC codes. This procedure allows me to select a matched sample of acquisitions of non-PE-backed firms that are comparable to the acquisitions of PE-backed firms in a wide range of characteristics in which the two initial subsamples differ. The remaining unmatched comparison sample becomes useless and is discarded. In order to confirm that the two samples are comparable across the relevant characteristics, I re-estimate the logistic model predicting whether a deal involves a PE-backed or a non- PE-backed target using the matched sample and check that none of the coefficients of the independent regressors is significant. Results are reported in regression (2) of Table VIII[12].

In Table IX, I use the matched sample to re-estimate the impact of PE-backing on returns to acquirer. Regression (1) uses the exact same specification as the second regression in Table VII. Regression (2) is run on the subsample of acquisitions of targets from Western Europe. Regression (3) is run on the subsample of acquisitions of targets with a relative size above 10%. The coefficient of the indicator variable for PE-backing is negative and highly statistically significant in all specifications. None of the other independent variables is consistently significant at the 10% level (holding aside the relative size variable).

8. Conclusion

This study investigates whether private equity (PE)-backing of acquired firms has an impact on announcement period abnormal returns to acquirers in 17 Western European countries over the period 2003-2008. The main finding is that acquisitions of PE-backed companies generate a significant smaller wealth increase for shareholders than do acquisitions

[12] For each of the variables, I also check that the differences in means between the sample of acquisitions of PE-backed firms and the matched sample of acquisitions of non-PE-backed targets are not significant (results are unreported for brevity).

of other unlisted firms. This “PE-backing effect” is robust to the inclusion of a battery of variables in cross-sectional regressions, including the acquirer size, the relative market values of the target and acquiring firms, the method of payment for the target, the acquirer Tobin's Q, the acquirer leverage, whether the acquisition is a cross-border transaction, whether the acquirer and the target are in the same industry, and whether the target belongs to a technology intensive industry. Further, the wealth increase associated with acquisitions of unlisted targets is significantly lower when targets are PE-backed, regardless of the quality of investor protection provided by legal systems (except for acquirers in countries with Scandinavian legal tradition). Last, using a propensity score matching method on a wide range of characteristics in which the two groups of acquisitions differ in the initial sample, I confirm that the presence of PE firms in the targets lowers returns to acquirers. I suggest that the differing market reactions to the acquisitions of PE-backed targets versus other unlisted targets are due to better price negotiating power of PE investors which results in acquirers paying a higher price when they buy PE-backed targets.

Further investigation is necessary to assess whether PE-backed firms are sold at higher premiums than non-PE-backed targets. Measuring premiums paid by acquirers is not straightforward as premiums based on market value are unavailable for unlisted targets. Additionally, computing acquisitions multiples based on target accounting information require manually collecting new data as, in most cases, target accounting information is missing in the Thomson Financial’s Mergers and Acquisitions database for European unlisted companies.

Further research could also consider PE investors as a heterogeneous population and investigate whether returns to acquirers are impacted by the characteristics of the PE investors involved in the target. For instance, a growing literature has shed light on differences in investment behavior between independent and dependent (such as subsidiaries of banks or corporation) funds (Gompers and Lerner, 2000; Hellmann, Lindsey and Puri, 2008). The differences in affiliation may not only alter the investment but also the divestment strategies of PE investors since independent investors pursue higher short term performance and face harder budget constraint than dependent investors.

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Table I
Sample Distribution by Announcement Year

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. Acquisitions are listed by year of announcement. Figures are broken into two groups whether targets are PE-backed or not. Variable definitions are given in Appendix.

Year	Number of Acquisitions (% of Total Sample Each Year)				Mean Acquirer Size ($mil) (Median)			Mean Deal Value ($mil) (Median)			Mean Relative Size (Median)		
	PE-backed Targets	Non-PE-backed Targets	Total	Percentage of Sample	PE-backed Targets	Non-PE-backed Targets	Total	PE-backed Targets	Non-PE-backed Targets	Total	PE-backed Targets	Non-PE-backed Targets	Total
2003	27	221	248	12,3%	1214,2	949,3	978,1	89,9	65,6	68,3	32,6%	16,9%	18,6%
	(10,9%)	(89,1%)	(100,0%)		(281,7)	(229,0)	(229,4)	(39,1)	(15,0)	(16,4)	(11,9%)	(6,5%)	(6,7%)
2004	45	245	290	14,4%	2396,7	1154,0	1346,8	231,0	76,1	100,2	19,8%	16,5%	17,0%
	(15,5%)	(84,5%)	(100,0%)		(1003,0)	(221,2)	(264,0)	(86,4)	(13,4)	(17,2)	(11,7%)	(6,8%)	(6,9%)
2005	51	339	390	19,4%	3268,5	2270,7	2401,2	286,1	124,3	145,4	22,8%	14,5%	15,6%
	(13,1%)	(86,9%)	(100,0%)		(812,0)	(239,1)	(250,3)	(72,5)	(16,7)	(19,9)	(10,2%)	(7,0%)	(7,4%)
2006	49	364	413	20,5%	3951,5	2287,7	2485,1	230,4	113,5	127,4	16,7%	17,3%	17,2%
	(11,9%)	(88,1%)	(100,0%)		(1000,4)	(248,9)	(267,7)	(76,5)	(17,5)	(21,1)	(7,4%)	(6,8%)	(6,9%)
2007	55	362	417	20,7%	4414,3	3034,7	3216,7	222,2	231,9	230,7	20,1%	15,6%	16,2%
	(13,2%)	(86,8%)	(100,0%)		(673,6)	(389,4)	(425,3)	(63,9)	(23,7)	(28,7)	(10,2%)	(6,8%)	(7,1%)
2008	24	228	252	12,5%	852,7	1938,4	1835,0	189,6	88,8	98,4	24,9%	15,4%	16,3%
	(9,5%)	(90,5%)	(100,0%)		(497,7)	(312,0)	(315,2)	(57,2)	(18,0)	(19,2)	(8,3%)	(5,1%)	(6,0%)
Total	251	1759	2010	100,0%	3044,6	2066,8	2188,9	221,0	125,5	137,5	21,7%	16,0%	16,7%
	(12,5%)	(87,5%)	(100,0%)		(737,9)	(261,0)	(282,4)	(65,4)	(17,6)	(20,8)	(10,2%)	(6,6%)	(6,9%)

Table II
Sample Distribution by Home Country of the Acquirer and the Target

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. Acquisitions are listed by home country of the acquirer and the target. Figures are broken into groups by legal tradition and whether targets are PE-backed or not.

Country	Acquirers			Targets		
	PE-backed Targets	Non-PE-backed Targets	Total	PE-backed Targets	Non-PE-backed Targets	Total
English Law						
United Kingdom	118	1001	1119	93	749	842
Ireland-Rep	4	44	48	5	26	31
United States				48	230	278
Australia				1	22	23
Canada				2	19	21
India				0	7	7
Utd Arab Em				0	7	7
South Africa				0	5	5
Singapore				0	5	5
Israel				1	4	5
Other				1	15	16
Total English Law	122	1045	1167	151	1089	1240
% of Total	(48,6%)	(59,4%)	(58,1%)	(60,2%)	(61,9%)	(61,7%)
French Law						
France	24	110	134	18	83	101
Italy	9	57	66	6	55	61
Spain	7	52	59	7	46	53
Netherlands	17	50	67	8	37	45
Belgium	5	23	28	3	13	16
Portugal	2	11	13	2	8	10
Greece	0	11	11	0	7	7
Luxembourg	1	4	5	1	1	2
Russian Fed				1	11	12
Brazil				0	8	8
Mexico				0	6	6
Turkey				0	5	5
Other				0	16	16
Total French Law	65	318	383	46	296	342
% of Total	(25,9%)	(18,1%)	(19,1%)	(18,3%)	(16,8%)	(17,0%)
Scandinavian Law						
Sweden	22	149	171	19	78	97
Norway	9	82	91	2	56	58
Finland	9	47	56	5	30	35
Denmark	1	30	31	5	29	34
Total Scandinavian Law	41	308	349	31	193	224
% of Total	(16,3%)	(17,5%)	(17,4%)	(12,4%)	(11,0%)	(11,1%)
German Law						
Germany	12	58	70	16	118	134
Switzerland	7	22	29	4	19	23
Austria	4	8	12	2	10	12
China				0	7	7
Other				1	16	17
Total German Law	23	88	111	23	170	193
% of Total	(9,2%)	(5,0%)	(5,5%)	(9,2%)	(9,7%)	(9,6%)
Other				0	11	11
% of Total				0,0%	0,6%	0,5%
Total	251	1759	2010	251	1759	2010

Table III
Sample Distribution by Acquirer Country of Listing, Local Market Index and Currency

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. Acquisitions are listed by acquirer country of listing (16 countries of listing, no acquirers being listed in Luxemburg). Figures are broken into two groups whether targets are PE-backed or not.

Acquirer Country of Listing	Whole sample		PE-backed Targets		Non-PE-backed Targets		Stock Market Index	Currency
	N	%	N	%	N	%		
United Kingdom	1131	56,3%	119	47,4%	1012	57,5%	FTSE ALL SHARE	£
Sweden	174	8,7%	22	8,8%	152	8,6%	OMX AFFARSVARLDENS GENERAL	SK
France	137	6,8%	25	10,0%	112	6,4%	SBF 120	E
Norway	92	4,6%	9	3,6%	83	4,7%	OSLO SE OBX	NK
Germany	73	3,6%	14	5,6%	59	3,4%	DAX 30 PERFORMANCE	E
Italy	65	3,2%	8	3,2%	57	3,2%	FTSE ITALIA ALL SHARE	E
Netherlands	60	3,0%	15	6,0%	45	2,6%	AEX INDEX (AEX)	E
Spain	59	2,9%	7	2,8%	52	3,0%	IBEX 35	E
Finland	56	2,8%	9	3,6%	47	2,7%	OMX HELSINKI (OMXH)	E
Republic of Ireland	42	2,1%	3	1,2%	39	2,2%	IRELAND SE OVERALL (ISEQ)	E
Switzerland	30	1,5%	8	3,2%	22	1,3%	SWISS MARKET	SF
Denmark	29	1,4%	1	0,4%	28	1,6%	OMX COPENHAGEN BMARK (OMXCB)	DK
Belgium	27	1,3%	5	2,0%	22	1,3%	BEL 20	E
Portugal	13	0,6%	2	0,8%	11	0,6%	PORTUGAL PSI-20	E
Greece	11	0,5%	0	0,0%	11	0,6%	ATHEX COMPOSITE	E
Austria	11	0,5%	4	1,6%	7	0,4%	WIENER BOERSE INDEX (WBI)	E
Total	2010	100,0%	251	100,0%	1759	100,0%		

Table IV
Summary Statistics

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. Panel A summarizes deal-specific data and Panel B reports characteristics of the acquiring firms. Figures are broken into two groups whether targets are PE-backed or not. Variable definitions are given in Appendix. Significance for differences in means is based on the t-test. Significance for differences in medians is based on the Wilcoxon-Mann-Whitney rank sum test. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

Variable	Sample	#	Mean	Median	St.Dev.	Min.	Max.	Q1	Q3	PE vs. Non-PE	
										Mean	Median
Panel A: Deal Characteristics											
Deal Value	PE-backed Targets	251	221,0	65,4	530,0	1,5	4632,3	24,5	190,0	***	***
	Non-PE-backed Targets	1759	125,5	17,6	628,3	1,0	15648,6	6,6	51,3		
	Total	2010	137,5	20,8	617,6	1,0	15648,6	7,1	65,0		
Relative Size	PE-backed Targets	251	21,7%	10,2%	30,0%	1,1%	191,5%	4,2%	26,7%	***	***
	Non-PE-backed Targets	1759	16,0%	6,6%	27,9%	1,0%	272,6%	2,7%	16,7%		
	Total	2010	16,7%	6,9%	28,2%	1,0%	272,6%	2,8%	17,6%		
Within-Industry	PE-backed Targets	251	56,2%	1,0	0,50	0,0	1,0	0,0	1,0	n.s	n.s
	Non-PE-backed Targets	1759	60,3%	1,0	0,49	0,0	1,0	0,0	1,0		
	Total	2010	59,8%	1,0	0,49	0,0	1,0	0,0	1,0		
Cross-Border	PE-backed Targets	251	54,2%	1,0	0,50	0,0	1,0	0,0	1,0	**	**
	Non-PE-backed Targets	1759	47,5%	0,0	0,50	0,0	1,0	0,0	1,0		
	Total	2010	48,3%	0,0	0,50	0,0	1,0	0,0	1,0		
High-Tech Target	PE-backed Targets	251	27,5%	0,0	0,45	0,0	1,0	0,0	1,0	***	***
	Non-PE-backed Targets	1759	19,7%	0,0	0,40	0,0	1,0	0,0	0,0		
	Total	2010	20,7%	0,0	0,41	0,0	1,0	0,0	0,0		
Stock	PE-backed Targets	249	24,1%	0,0	0,43	0,0	1,0	0,0	0,0	n.s	n.s
	Non-PE-backed Targets	1759	22,6%	0,0	0,42	0,0	1,0	0,0	0,0		
	Total	2008	22,8%	0,0	0,42	0,0	1,0	0,0	0,0		
Panel B: Acquirer Characteristics											
Acquirer Size	PE-backed Targets	251	3044,6	737,9	10907,1	6,0	142215,6	148,8	2426,1	n.s	***
	Non-PE-backed Targets	1759	2066,8	261,0	9695,7	1,3	173009,3	88,5	893,2		
	Total	2010	2188,9	282,4	9857,5	1,3	173009,3	92,4	1050,6		
Acquirer Q	PE-backed Targets	247	2,21	1,74	1,50	0,48	12,15	1,35	2,59	n.s	*
	Non-PE-backed Targets	1747	2,14	1,68	2,09	0,42	46,89	1,31	2,28		
	Total	1994	2,15	1,69	2,02	0,42	46,89	1,31	2,33		
Acquirer Leverage	PE-backed Targets	247	18,9%	15,9%	17,2%	0,0%	95,2%	4,5%	28,1%	n.s	n.s
	Non-PE-backed Targets	1745	19,4%	17,4%	17,1%	0,0%	184,1%	5,0%	29,1%		
	Total	1992	19,3%	17,2%	17,1%	0,0%	184,1%	4,9%	28,9%		
Acq_EnglishLT	PE-backed Targets	251	48,6%	0,0	0,50	0,0	1,0	0,0	1,0	***	***
	Non-PE-backed Targets	1759	59,4%	1,0	0,49	0,0	1,0	0,0	1,0		
	Total	2010	58,1%	1,0	0,49	0,0	1,0	0,0	1,0		

Table V
Predicting Whether a Deal Involves a PE-Backed Target Using a Logit Model

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. The table presents estimates from a logistic model predicting whether a deal involves a PE-backed or a non-PE-backed target. The dependent variable in the model is the *PE-backed Target* indicator. Independant variables include deal- and acquirer-specific characteristics. Variable definitions are given in Appendix. The z-stats are based on QML (Huber/White) heteroskedasticity-consistent standard errors. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

Dependent variable : PE-backed Target

	Coeff.	z-Stat.	
Relative Size	1,055	(5,28)	***
Within-Industry	-0,258	-(1,82)	*
Cross-Border	-0,058	-(0,38)	
HighTech Target	0,579	(3,45)	***
Stock	0,307	(1,71)	*
log (Acquirer Size)	0,335	(7,79)	***
Acquirer Q	0,013	(0,51)	
Acquirer Leverage	-0,768	-(1,51)	
Acq_EnglishLT	-0,149	-(0,96)	
C	-4,016	-(11,60)	***
N	1990		
Log likelihood	-700,208		
McFadden R^2	5,69%		
Obs with Dep=0	1745		
Obs with Dep=1	245		

Table VI
Univariate Analysis of Acquirer CARs for PE-backed and Non-PE-backed Targets

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. The table reports the mean and median Cumulative Abnormal Return (CAR) for the acquirer stock, which is calculated over the three trading days around the acquisition announcement [-1,1].Variable definitions are given in Appendix. Figures are broken into two groups whether targets are PE-backed or not. Figures are also tabulated across deal-specific data (Panel A) and characteristics of acquiring firms (Panel B). For continuous variables, the sample is split into two groups whether the variable takes a value which is above (high) or below (low) the median. Significance for differences in means is based on the t-test. Significance for differences in medians is based on the Wilcoxon-Mann-Whitney rank sum test. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

			CAR [-1,+1] PE-backed Targets (1)	CAR [-1,+1] Non-PE-backed Targets (2)	CAR [-1,+1] Total	Difference (1)-(2)
Total		**Mean**	**1,12%**	**2,11%**	**1,99%**	**
		Median	**0,45%**	**0,97%**	**0,91%**	***
		#	**251**	**1759**	**2010**	
Panel A: Deal Characteristics						
Deal Value	Low	Mean	0,24%	1,83%	1,74%	n.s
		Median	0,07%	0,93%	0,91%	n.s
		#	56	949	1005	
	High	Mean	1,37%	2,44%	2,23%	**
		Median	0,53%	1,08%	0,93%	**
		#	195	810	1005	
Relative Size	Low	Mean	-0,04%	0,67%	0,60%	n.s
		Median	-0,11%	0,32%	0,30%	n.s
		#	99	906	1005	
	High	Mean	1,87%	3,64%	3,37%	**
		Median	1,08%	2,17%	2,03%	***
		#	152	853	1005	
Within-Industry	No	Mean	1,50%	2,25%	2,15%	n.s
		Median	0,50%	1,14%	1,01%	n.s
		#	110	698	808	
	Yes	Mean	0,82%	2,02%	1,88%	*
		Median	0,30%	0,90%	0,81%	**
		#	141	1061	1202	
Cross-Border	No	Mean	0,32%	2,17%	1,96%	***
		Median	-0,01%	0,98%	0,93%	***
		#	115	924	1039	
	Yes	Mean	1,79%	2,05%	2,01%	n.s
		Median	0,53%	0,95%	0,91%	n.s
		#	136	835	971	
High-Tech Target	No	Mean	0,91%	2,00%	1,88%	**
		Median	0,47%	0,96%	0,91%	***
		#	182	1412	1594	
	Yes	Mean	1,65%	2,57%	2,41%	n.s
		Median	0,38%	1,03%	0,92%	n.s
		#	69	347	416	

Table VI (cont.)
Univariate Analysis of Acquirer CARs for PE-backed and Non-PE-backed Targets

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. The table reports the mean and median Cumulative Abnormal Return (CAR) for the acquirer stock, which is calculated over the three trading days around the acquisition announcement [-1,1].Variable definitions are given in Appendix. Figures are broken into two groups whether targets are PE-backed or not. Figures are also tabulated across deal-specific data (Panel A) and characteristics of acquiring firms (Panel B). For continuous variables, the sample is split into two groups whether the variable takes a value which is above (high) or below (low) the median. Significance for differences in means is based on the t-test. Significance for differences in medians is based on the Wilcoxon-Mann-Whitney rank sum test. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

			CAR [-1,+1] PE-backed Targets (1)	CAR [-1,+1] Non-PE-backed Targets (2)	CAR [-1,+1] Total	Difference (1)-(2)
Total		**Mean**	**1,12%**	**2,11%**	**1,99%**	**
		Median	**0,45%**	**0,97%**	**0,91%**	***
		#	**251**	**1759**	**2010**	
Panel B: Acquirer Characteristics						
Acquirer Size	Low	Mean	0,98%	2,94%	2,77%	*
		Median	0,43%	1,47%	1,43%	**
		#	87	918	1005	
	High	Mean	1,19%	1,20%	1,20%	n.s
		Median	0,47%	0,55%	0,53%	n.s
		#	164	841	1005	
Acquirer Q	Low	Mean	1,20%	2,25%	2,13%	*
		Median	0,82%	1,19%	1,13%	n.s
		#	119	878	997	
	High	Mean	0,88%	1,99%	1,84%	n.s
		Median	0,20%	0,79%	0,69%	**
		#	128	869	997	
Acquirer Leverage	Low	Mean	1,09%	2,05%	1,92%	n.s
		Median	0,43%	0,97%	0,93%	*
		#	131	865	996	
	High	Mean	0,97%	2,18%	2,04%	*
		Median	0,45%	0,95%	0,88%	**
		#	116	880	996	
Acq_EnglishLT	No	Mean	1,71%	2,58%	2,45%	n.s
		Median	0,53%	1,22%	1,16%	*
		#	129	714	843	
	Yes	Mean	0,49%	1,79%	1,65%	**
		Median	0,43%	0,79%	0,74%	*
		#	122	1045	1167	

Table VII
Multivariate Analysis of Acquirer CARs for PE-backed and Non-PE-backed Targets

The sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. The table reports ordinary least squares estimates. The dependent variable is the Cumulative Abnormal Return (CAR) for the acquirer stock and is calculated over the three trading days around the acquisition announcement [-1, 1]. Independent variables include an indicator of target PE-backing and deal- and acquirer-specific characteristics. Variable definitions are given in Appendix. Regressions (2) to (5) also include year and industry dummies (based on 2-digit acquirer SIC code), whose coefficient are suppressed. Regressions (1) to (3) are run on the whole sample. Regression (4) is run on the subsample of acquisitions of targets from Western Europe. Regression (5) is run on the subsample of acquisitions of targets with a relative size above 10%. The t-stats are based on White heteroskedasticity-consistent standard errors. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

	(1)		(2)		(3)		(4)		(5)	
Dependent variable : CAR [-1,+1]	Whole Sample		Whole Sample		Whole Sample		Western Europe		Relative Size > 10%	
	Coeff.	t-Stat.	Coeff.	t-Stat.	Coeff.	t-Stat.	Coeff.	t-Stat.	Coeff.	t-Stat.
PE-backed Target	-0,016	-(3,32) ***	-0,014	-(3,05) ***			-0,014	-(2,64) ***	-0,022	-(2,80) ***
Relative Size	0,068	(4,45) ***	0,067	(4,40) ***	0,067	(4,40) ***	0,066	(4,01) ***	0,062	(3,20) ***
Within-Industry	-0,005	-(1,93) *	-0,004	-(1,46)	-0,004	-(1,43)	-0,004	-(1,32)	-0,008	-(1,35)
Cross-Border	0,004	(1,11)	0,003	(0,78)	0,002	(0,70)	0,001	(0,14)	0,004	(0,61)
HighTech Target	0,005	(1,18)	0,009	(2,07) **	0,009	(2,06) **	0,008	(1,67) *	0,016	(2,04) **
Stock	0,000	(0,07)	0,000	(0,07)	0,000	(0,05)	0,002	(0,45)	-0,003	-(0,48)
Log(Acquirer Size)	-0,002	-(2,01) **	-0,002	-(1,96) *	-0,002	-(1,74) *	-0,002	-(1,33)	0,001	(0,25)
Acquirer Q	-0,001	-(0,74)	-0,001	-(0,66)	-0,001	-(0,66)	-0,001	-(0,61)	0,000	-(0,13)
Acquirer Leverage	-0,007	-(0,78)	-0,005	-(0,57)	-0,005	-(0,51)	0,002	(0,15)	-0,019	-(1,24)
Acq_EnglishLT	-0,006	-(2,08) **	-0,008	-(2,52) **	0,020	(1,95) *	-0,008	-(2,27) **	-0,003	-(0,43)
(Acq_EnglishLT)*(PE-backed Target)					-0,014	-(2,16) **				
Acq_GermanLT					0,028	(2,10) **				
(Acq_GermanLT)*(PE-backed Target)					-0,026	-(1,71) *				
Acq_FrenchLT					0,025	(2,21) **				
(Acq_FrenchLT)*(PE-backed Target)					-0,014	-(1,65) *				
Acq_ScandLT					0,031	(2,73) ***				
(Acq_ScandLT)*(PE-backed Target)					-0,010	-(0,69)				
C	0,031	(3,36) ***	0,029	(2,65) ***			0,026	(2,14) **	0,008	(0,38)
Year Dummies	N		Y		Y		Y		Y	
Industry Dummies	N		Y		Y		Y		Y	
N	1990		1990		1990		1546		781	
R^2	10,7%		13,6%		13,7%		15,7%		17,0%	
Adjusted R^2	10,2%		10,4%		10,3%		11,8%		9,7%	
F-statistic	23,705		4,300				3,995		2,337	
Prob(F-statistic)	0,000		0,000				0,000		0,000	

Table VIII
Comparison of Whole and Matched Sample Characteristics
after Propensity Score Matching Procedure

The whole sample consists of 2010 acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. The matched sample represents 249 matched pairs of acquisitions. The table presents estimates from a logistic model predicting whether a deal involves a PE-backed or a non-PE-backed target. The dependent variable in the model is the *PE-backed Target* indicator. Independant variables include deal- and acquirer-specific characteristics. Variable definitions are given in Appendix. The z-stats are based on QML (Huber/White) heteroskedasticity-consistent standard errors. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

Dependent variable : PE-backed Target	**Whole Sample (1)**		**Matched Sample (2)**	
	Coeff.	z-Stat.	Coeff.	z-Stat.
Relative Size	1,054	(5,46) ***	0,496	(1,43)
Within-Industry	-0,252	-(1,79) *	0,129	(0,70)
HighTech Target	0,636	(3,97) ***	-0,127	-(0,61)
Stock	0,338	(1,96) *	-0,270	-(1,18)
log (Acquirer Size)	0,322	(8,36) ***	0,063	(1,11)
C	-4,178	-(14,67) ***	-0,461	-(1,04)
N	2008		498	
Log likelihood	-712,148		-341,980	
McFadden R^2	5,38%		0,93%	
Obs with Dep=0	1759		249	
Obs with Dep=1	249		249	

Table IX
Robustness Check : Analysis of Acquirer CARs Using a Propensity Score Matching Procedure

The matched sample represents 245 matched pairs of acquisitions of unlisted companies completed by public acquirers from 17 Western European countries between 2003 and 2008. Half of the sample consists of acquisitions of PE-backed companies and the other half consists of acquisitions of non-PE-backed companies. Propensity score matching is used to choose the matching acquisitions of non-PE-backed firms. Regression (1) is run on the whole matched sample. Regression (2) is run on the subsample of acquisitions of targets from Western Europe. Regression (3) is run on the subsample of acquisitions of targets with a relative size above 10%. The table reports ordinary least squares estimates. The dependent variable is the Cumulative Abnormal Return (CAR) for the acquirer stock and is calculated over the three trading days around the acquisition announcement [-1, 1] . Independent variables include an indicator of target PE-backing and deal- and acquirer-specific characteristics. Models also include year and industry dummies (based on 2-digit acquirer SIC code), whose coefficient are suppressed. Variable definitions are given in Appendix.The t-stats are based on White heteroskedasticity-consistent standard errors. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

Dependent variable : CAR [-1,+1]	(1) Matched Sample		(2) Matched Sample Western Europe		(3) Matched Sample Relative Size > 10%	
	Coeff.	t-Stat.	Coeff.	t-Stat.	Coeff.	t-Stat.
PE-backed Target	-0,016	-(2,67) ***	-0,014	-(2,08) **	-0,030	-(2,67) ***
Relative Size	0,047	(2,34) **	0,062	(2,73) ***	0,028	(1,05)
Within-Industry	-0,013	-(1,85) *	-0,010	-(1,38)	-0,014	-(1,11)
Cross-Border	0,010	(1,44)	0,009	(1,09)	0,016	(1,36)
HighTech Target	0,005	(0,65)	0,004	(0,48)	0,009	(0,61)
Stock	-0,007	-(0,66)	-0,009	-(0,88)	-0,010	-(0,72)
Log(Acquirer Size)	-0,003	-(0,96)	-0,002	-(0,72)	-0,001	-(0,30)
Acquirer Q	-0,004	-(1,89) *	-0,001	-(0,35)	-0,006	-(1,74) *
Acquirer Leverage	0,031	(1,52)	0,054	(2,31) **	0,015	(0,49)
Acq_EnglishLT	-0,002	-(0,37)	-0,003	-(0,34)	0,004	(0,28)
C	0,052	(1,75) *	0,033	(1,03)	0,026	(0,38)
Year Dummies	Y		Y		Y	
Industry Dummies	Y		Y		Y	
N	490		371		232	
R^2	18,8%		19,9%		24,1%	
Adjusted R^2	9,3%		8,0%		6,2%	
F-statistic	1,984		1,667		1,349	
Prob(F-statistic)	0,000		0,006		0,089	

Appendix : Variable Definitions and Sources

Variable	Definition	Source
Acquirer Return		
CAR [-1,+1]	Three-day cumulative abnormal return (in percentage) calculated around the announcement day [-1,+1], using the market model. The market model parameters are estimated over a period of 240 days, starting 40 days prior to the event window. Country stock market indexes are used for market returns. Returns have to be available in more than 50% of the days of the estimation period.	Thomson M&A [(1)]; Datastream
Deal Characteristics		
PE-backed Target	Section 5 of the paper describes the two-step methodology used to identify PE-backed targets	Thomson M&A [(1)]; VentureXpert;press releases and/or investors' websites
Deal Value	Total value of consideration paid by the acquirer, excluding fees and expenses (in million U.S. dollars).	Thomson M&A [(1)]
Relative Size	Ratio of the consideration paid for the acquisition over acquirer's market capitalization as of 20 days before the deal annoucement day.	Thomson M&A [(1)]; Datastream
Within-Industry	Indicator equals 1 if the acquirer's and the target's primary 2-digit SIC code coincides, and equals 0 otherwise.	Thomson M&A [(1)]
Cross-Border	Indicator equals 1 if the acquirer's and the target's home country differ, and is 0 otherwise.	Thomson M&A [(1)]
HighTech Target	Indicator takes the value 1 if the target is a High-tech company, 0 otherwise. High-tech companies are defined as having their primary SIC codes 3571, 3572, 3575, 3577, 3578 (computer hardware), 3661, 3663,3669 (communications equipment), 3674 (electronics), 3812 (navigation equipment), 3823, 3825, 3826, 3827, 3829 (measuring and controlling devices), 4899 (communication services), and 7370, 7371, 7372, 7373, 7374, 7375, 7379 (software).	Thomson M&A [(1)]; Loughran and Ritter (2001) and Ljungqvist and Wilhelm (2003).
Stock	Indicator equals 1 if the deal is at least partially stock-financed, 0 otherwise.	Thomson M&A [(1)]
Acquirer Characteristics		
Acquirer Size	Acquirer's market capitalization as of 20 days before the deal announcement (in million U.S. dollars).	Datastream
Acquirer Q	Ratio of the book value of acquirer's assets minus book value of equity plus market value of equity over the book value of assets. Book values are as of last fiscal year-end prior to deal announcement. Market value of equity equals the Acquirer Size defined above.	Datatream; Worldscope
Acquirer Leverage	Ratio of the acquirer's total debt to total assets as of last fiscal year-end prior to deal announcement.	Worldscope
Acq_EnglishLT	Indicator equals 1 if the acquirer is from a country with an English legal tradition, and equals 0 otherwise.	Thomson M&A [(1)]; La Porta et al. (2000)
Acq_GermanLT	Indicator equals 1 if the acquirer is from a country with a German legal tradition, and equals 0 otherwise.	Thomson M&A [(1)]; La Porta et al. (2000)
Acq_FrenchLT	Indicator equals 1 if the acquirer is from a country with a French legal tradition, and equals 0 otherwise.	Thomson M&A [(1)]; La Porta et al. (2000)
Acq_ScandLT	Indicator equals 1 if the acquirer is from a country with a Scandinavian legal tradition, and equals 0 otherwise.	Thomson M&A [(1)]; La Porta et al. (2000)

[(1)] Thomson M&A refers to Thomson Financial's Mergers and Acquisitions database