Private Equity Discounts in M&A Transactions – Relationships Matter!

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Abstract

Based on pricing information for 20'643 M&A transactions we show that private equity funds pay on average less for comparable companies than strategic buyers. Controlling for company and deal characteristics, we find that relationships with financial advisors play a significant role to explain this discount. Private equity firms achieve higher transaction discounts the stronger their (indirect) relationships with financial advisors. Strategic acquirers do not benefit from these relationships. We argue that due to superior deal making capabilities private equity funds manage their relationships with financial advisors more professionally and are in a better position to exploit value from their relationships with them.

Keywords: Private Equity, Mergers and Acquisitions, Take-over Premiums, Financial Advisors

JEL Codes: G15, G32, G34

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1 Introduction

Recent studies conclude that private equity ('PE') funds are outperforming public equity markets by generating high returns for their investors (see for example Harris et al. 2013). In exchange, general partners ('GPs') are compensated for these superior returns: besides a 1-2% management fee, GPs typically also benefit from a carried interest of 20% for all realized returns. But how do general partners actually manage to generate these high returns? On the level of portfolio companies, the value creation of private equity investments rests on three pillars: EBITDA increase, deleveraging, and multiple expansion. EBITDA increases as well as payback of debt are rather operational tasks that take place during the holding period of a private equity investment. Several studies (e.g., Axelson et al., 2014) have targeted these two sources of value creation on the deal level, yet, we know only little if and how PE funds manage to buy portfolio companies cheap (e.g., with low multiples) and sell them dear (e.g., with high multiples). If a private equity fund is able to buy a company at a discount and sell it at a premium in comparison to other investors, it will have a positive impact on the overall deal return. Why should PE funds be better at buying and selling companies for low/high valuation levels than strategic firms? In contrast to most strategic M&A players, buying and selling of companies is at the very heart of the PE business model. Most GPs are involved in numerous deals per year which allows them to acquire a high level of deal making experience as well as relevant relationships and industry networks. Finally, many buyout GPs used to work in senior investment bank positions as financial advisors before joining PE funds.

Against this background, the main aim of our paper is to investigate if PE funds indeed manage to buy (sell) companies ceteris paribus for a lower (higher) valuation as compared to strategic buyers and if so, we want to investigate why this is the case. Based on a data sample of 20’643 M&A transactions (thereof 4’402 PE transactions), we first compare the M&A performance of private equity funds and strategic buyers. Existing literature focuses on abnormal stock returns experienced by the shareholders of the acquirers or targets in order to assess whether private equity buyers pay indeed less than strategic buyers (e.g., Bargeron et al. 2008). We, however, use Enterprise Value/EBITDA multiples paid in M&A transactions by private equity and strategic buyers. In contrast to existing literature, this approach allows us to (i) include acquisitions of private non-listed companies, (ii) analyze the exit scenario when GPs are divesting their portfolio companies, and (iii) directly identify the M&A performance by analyzing value paid in the transaction structure. Controlling for deal typical characteristics (volume, investment year, deal

attitude, etc.) and company characteristics (industry, profit, asset size, etc.), we find that private equity buyers manage to enforce a discount for their portfolio companies compared to strategic buyers. Yet, on the exit side we observe a different picture: in contrast to buying cheap, PE funds do not manage to achieve higher multiples in trade and secondary sales as compared to sell-offs initiated by other strategic sellers. In a second step, we link the M&A performance of private equity funds and strategic buyers to the relationships they maintain to financial advisors. If private equity funds indeed possess superior deal making capabilities this should reflect how they handle deal-related advisory relationships. For this, we analyzed deal-level advisory relationships for 76,747 transactions undertaken by 18'156 strategic buyers and 2,441 GPs that were advised by 1,097 financial advisors. For our analyses, we focused on the relative delta multiples at entry and at exit. We defined M&A discounts of private equity funds as the delta between an EBITDA multiple paid (entry) or received (exit) by PE funds with an industry-wide benchmark multiple. In line with existing literature on the role of financial advisors (see Golubov et al. (2012)), we find that private equity funds do not benefit from close relationships with their own financial advisors in terms of M&A discounts (so-called *direct* relationships, measured by the number of times they were advised by the same investment bank). However, we find empirical prove that the M&A discount increases when a GP buys a company, which is advised by a financial advisor with whom the general partner maintains an active relationship (so-called *indirect* relationship). We do not observe any of these effects for strategic buyers. Strategic buyers tend to be more loyal to their financial advisors, whereas general partners maintain a more diverse network of different financial advisors with whom they collaborate. By doing so, it appears that GPs create more competition among their financial advisors to fight for future business. It is often referred to as one of the advantages of PE funds, that they maintain superior deal making capabilities as they are more active deal makers.

Our paper contributes to existing literature in two aspects: first, we add empirical proof to the fact that PE funds indeed prevail a discount in M&A transactions when buying a portfolio company. However, in contrast to existing literature, we focus on transaction values (e.g., EV/EBITDA multiples). To our knowledge, our paper is the first study that is not limited to entry deals only but documents that on the exist side a corresponding valuation premium can't be observed in case a PE fund divests a portfolio company via a M&A transaction. Second, we explain the pricing discount on the entry side by linking it to superior deal-making capabilities and existing relationships between GPs and their financial advisors. In this context, we expand empirical research on the benefit of financial advisors in M&A transactions by introducing also indirect relationship networks between GPs and financial advisors. We show that these relation-

ship structures have an impact on PE discounts levels. Axelson et al. (2013) quite prominently argue that (the availability of) leverage drives buyout pricing levels up, whereas Achleitner et al. (2011) add to the discussion and show that entry pricing levels are positively correlated with industry-wide public market valuations. Acharya et al. (2012) show that general partners with a banking background are successful in conducting add-on acquisitions for their portfolio companies in terms of EV/EBITDA expansion. Comparing the performance of private equity versus strategic buyers in M&A transactions, research so far relies on a rather indirect approach. To our knowledge, no study has focused on the relative deal-making performance of private equity funds based on EV/EBITDA multiples.

The remainder of this paper is organized as follows: Section 2 presents the relevant literature followed by Section 3, which introduces the role and relationships of advisors in M&A transactions. Section 4 presents the data sample and explains the methodology. Section 5 displays the empirical results, which are discussed in Section 6. Finally, Section 7 concludes our results.

2 Literature Review

2.1 M&A performance of PE firms and strategic buyers

The value creation of private equity transactions is based on three different pillars: EBITDA increase, deleveraging, and multiple expansion. Several studies show that EV/EBITDA expansion (due to add-on acquisitions or operational improvements) has a positive impact on the deal performance. Acharya et al. (2013) investigate the value creation of buyout transactions and focus on operational performance. They document that the improvement of sales and operating margins during the holding period significantly adds to the abnormal performance of buyouts. They also show that the professional background of the general partners matters: ex-consultants are associated with outperforming deals in which internal value-creation programs are important, whereas ex-bankers tend to be involved in deals involving significant add-on mergers and acquisitions. Wilson et al. (2012) find empirical proof that portfolio companies of private equity funds outperform non-private equity related companies in profitability as well as productivity improvements. In addition, Fang et al. (2013) outline that bank-affiliated private equity groups do not outperform their peers with regard to deal level returns.

In our paper, we focus on multiple expansions as a value creation driver in PE transactions and investigate the pricing levels of M&A transactions undertaken by private equity funds. Pricing levels (commonly measured as entry and exit EV/EBITDA multiples) are important as

they determine the multiple increase between the entry and exit of a portfolio company. With regard to the existing research on valuation levels of M&A activity of private equity funds, we differentiate between two strings of literature: (i) empirical studies focusing on the determinants of pricing levels in buyout transactions and (ii) papers comparing the M&A performance of private equity buyers versus strategic buyers.

Most prominently, Axelson et al. (2013) demonstrate in line with the first string of literature that the capital structure of buyout transactions matters with regard to the pricing level: higher leverage ratios drive entry multiples up and deal returns down. They furthermore show that the leverage of buyout deals is driven by debt market conditions: if credit is cheap and abundant, entry multiples for PE transactions tend to go up (see also Demiroglu and James, 2010). Colla et al. (2012) add to this finding and prove that pre-buyout profitability is positively correlated with the amount of leverage a private equity fund is able to gain access to in a buyout transaction.

In a study focusing on the factors driving entry and exit buyout valuations, Achleitner et al. (2011) show that EV/EBITDA levels at entry and exit have significant impact on the performance of private equity funds: a high EV/EBITDA multiple expansion (increase between entry and exit multiples) correlates with a positive deal-level performance of the underlying private equity fund. They further state that industry-specific public market valuations (measured by EV/EBITDA trading multiples) have a positive impact on buyout pricing at entry (e.g., when a private equity fund acquires a portfolio company). In a study reflecting on different sources of value creation in buyout transactions, Guo et al. (2011) show that multiple expansion is as important as tax benefits as a driver for deal level returns due to high leverage or operational improvements. Following Achleitner et al. (2011), they also document a significant and positive correlation between changes in comparable industry multiples and deal returns. However, both studies do not compare the relative delta between industry-wide and buyout EV/EBITDA multiples as we do in our study.

Officer et al. (2010) compare valuation levels in U.S. buyout transactions linked to club deals (two or more private equity funds join forces to acquire a company) versus sole-sponsored deals. They outline that target shareholders receive 40% lower takeover premiums in club deals as opposed to sole-sponsored buyouts. Concentrating on secondary buyouts, Arcot et al. (2014) examine if PE funds that are under pressure (e.g., due to a late stage of the fund's life cycle) are willing to accept lower valuations (as a seller) or are paying higher multiples (as a buyer), respectively. They find that pressured PE buyers are indeed willing to pay higher multiples, whereas pressured PE sellers tend to accept lower multiple valuations.

The second string of financial literature targeting valuation levels of private equity transactions centers on a comparison between private and public buyers and their respective performance in M&A transactions. Bargeron et al. (2008) focus on public listed companies being acquired either by a private equity firm or a public firm (e.g., a strategic buyer). They document that public target shareholders receive a significantly higher take-over premium – controlling for deal characteristics – if acquired by a public firm than by a private equity firm. Premiums to target shareholders are defined as abnormal returns experienced over a time period prior to the transaction date. Based on their findings they conclude that public firms are willing to pay a higher price in M&A transactions as compared to private equity buyers. They explain their finding by controlling for managerial ownership and outline that the premium difference is the lowest for public firms acting as acquirers that maintain high managerial ownerships. Fidrmuc et al. (2012) focus on the selling process of public companies and compare private equity buyers versus strategic acquirers. The selection of the selling process (e.g., auction) has a major impact depending on whether the company is acquired by a private equity fund or strategic acquirer. Additionally, they outline that private equity firms tend to acquire companies that have more tangible assets, lower market-to-book ratios, and lower research and development expenses as compared to companies acquired by strategic buyers. Controlling for the selling process, Fidrmuc et al. (2012) do not find – in contrast to Bargeron et al. (2008) – any significant differences in takeover premiums paid by private equity firms and strategic acquirers. Gorbenko and Malenko (2014) target the behavior of strategic versus private equity bidders in auctions and show that a typical take-over target is valued higher in case of a strategic buyer. However, a more differentiated analysis reveals that this is not the case for all transactions: in roughly one fifth of all transactions (all are mature poorly performing companies) financial buyers are willing to pay a higher premium. They also reveal that valuations of financial buyers are more correlated to overall economic conditions. They conclude that strategic buyers do not only pay more due to potential synergies. Private equity buyers and strategic buyers are also attracted by different company types. Fuller et al. (2002) take another perspective and focus on shareholder gains of acquirers. They target very active acquirers (more than five transactions within a limited time period) and conclude that acquirers' shareholders benefit in terms of abnormal returns when the target is a private firm or a subsidiary but lose when it is a public listed entity.

2.2 Advisory functions in M&A transactions

Financial advisors support both acquirers and sellers throughout (friendly or hostile) transaction processes. If a buyer aims to acquire another company (target), usually both sides are

advised by financial advisors – typically an investment bank, an investment boutique, or a consulting firm. Sellers and buyers have to pay (significant) fees for these services. A question arising in this context is the value of these services. The existing financial literature offers some explanations and empirical evidence on the performance of financial advisors in M&A transactions. This string of literature has mainly focused on the acquirer and target stock performance following an acquisition or the announcement and linked it to the role of financial advisors: do high-quality advisors lead to a better M&A performance of acquirers? This hypothesis is often referred to as the skilled-advice hypothesis. Most studies have failed to show that acquirers benefit from reputable advisors (see for example Bowers and Miller (1990), McLaughlin (1990), Rau (2000), Moeller et al. (2004)). In a recent study, Golubov et al. (2012) confirm these results and outline that top-tier advisors only deliver higher bidder returns than their non-top-tier competitors in public transactions where the reputation and skill set of advisors is larger (see also Ismail (2010)). Servaes and Zenner (1996) compare deals in which acquirers are advised by external financial advisors with those solely managed by in-house teams and conclude that hiring financial advisors (and paying them high fees) does not directly lead to any benefits for buyers. Bao and Edmans (2011) undertake a different approach and base their findings on investment bank fixed effects. They document a significant investment bank fixed effect and conclude that financial advisors do matter for M&A transactions. Francis et al. (2012) find that existing banking relationships (e.g., lending business) do not matter when selecting financial advisors. They also detect that active acquirers are more likely to switch their financial advisors following a poor deal outcome. Song et al. (2012) compare the M&A performance of boutique advisors versus full-service banks and find that investment boutiques are more likely to be hired in complex deal structures. In addition, they also outline that deal premiums are lower when boutique advisors are involved.

3 Financial Advisors in M&A transactions

3.1 Role of financial advisors

Financial advisors are important stakeholders in the M&A process. The selling party, the target, as well as the acquirers involved in a deal rely on their expertise and know-how. Financial advisors are typically investment banks, universal banks, or investment boutiques. Their principle task in a transaction is to offer recommendations on the target's fair value and guide their clients through the acquisition process. In this role, banks collect a lot of information on the target. Allen et al. (2002) call them "specialists in information and production processing".

Banks can reuse information on a target obtained in previous deals and therefore often hold exclusive information.

For our relationship frameworks we differentiate between *direct* and *indirect* acquirer-advisor relationships. In our case, a *direct* relationship occurs when an advisor is directly hired as an agent by either a private equity or strategic buyer (buy-side mandate). An *indirect* relationship emerges when an advisor works on the sell-side of a transaction (offering advice to the target company), but is not hired by the acquiring private equity or strategic buyer for that specific deal (no buy-side mandate); yet the advisor may be hired by the buyer in previous or future transactions as a buy-side agent.

3.2 Acquirer-advisor relationship frameworks

In the following we are interested in the relationships that acquirers have with various types of financial advisors. Based on the direct and indirect relationships described above we define three relationship frameworks that exist between acquirers, target companies, and financial advisors – both for PE and strategic buyers. With regard to the time period measuring the intensity of the relationships between an acquirer and an advisor, we conclude that five years *before* and *after* a deal (ten years in total) is reasonable. High-ranked employees, usually partners, are the drivers of strong relationships. Partners driving the deal in t=0 would typically not have been in their position yet ten years before a deal (t = -10). Ten years after a deal (t = +10) they might have left the company. A total period of 10 years also corresponds to the lifetime of a typical private equity fund. Since large parts of a GP's income are attributed to the carried interest of the underlying fund, it is also reasonable to assume that partners stay with one PE firm for at least one fund's lifetime. This approach is also in line with existing literature (e.g., Francis et al. (2012), which also focuses on five-year relationships. We are aware of the potential causal relationship between the deal in t=0 and future relationships. However, we believe it is important to take past *and* future relationships into account as acquirer-advisor relationships might have been lose prior to a deal and might only have tightened after a deal. In unreported regressions, we run robustness checks where we only allow relationships before deals in t=0 in our sample. They lead to the same results.

Relationship (1): acquirers' relationships with their financial advisors five years before and after deal i

[Insert Figure 1A about here]

The first relationship in our focus represents a *direct* acquirer-advisor relationship: we want to know how many times an acquirer has hired the same financial advisor in the five years preceding a deal and the five years after it has taken place. Example: KKR buys ABC&Co on 31/09/2003. KKR is advised by financial advisor Morgan Stanley. How many more times in the five years before and after the deal was KKR advised by Morgan Stanley? Can financial advisors put pressure on the selling party if they have particularly strong relationships with the buyer? We investigate whether the direct relationship between financial advisors and their clients has any influence on price negotiations in M&A transactions.

Relationship (2): acquirers' relationships with their financial advisors five years before and after deal i if advisors worked with acquirers' targets in t=0

[Insert Figure 1B about here]

Relationship (2) is an *indirect* relationship between the acquirer and the *target's* advisor. It focuses on how many times an acquirer was advised by a specific financial advisor when acquiring a company within the five years before and after a specific deal if during the deal itself, this advisor advised the target and not the acquirer. Example: KKR buys ABC&Co on 31/09/2003. ABC&Co is advised by Morgan Stanley. How many times in the five years before and after the deal was KKR advised by Morgan Stanley in acquisitions? This type of relationship sheds light on the question whether banks have any incentive to push their clients for discounts when PE firms are involved with which they maintain stronger relationships.

Relationship (3): acquirers' relationships with target financial advisors five years before and after deal i

[Insert Figure 1C about here]

Relationship (3) develops the idea of relationship (2) one step further. It focuses on the number of times an acquirer bought targets that were advised by a specific financial advisor five years before and after a deal. Example: KKR buys ABC&Co on 31/09/2003. As is the case in relationship (2), ABC&Co is advised by Morgan Stanley. How many times in the five years before and after the deal were other portfolio companies that were bought by KKR advised by Morgan Stanley? Do longstanding indirect relationships between acquirers and target advisors lead to any preferential treatments of PE acquirers? In the following we argue that this may be the case, since the acquirer and the financial advisor have a history of working together on deals and have built up mutual trust. The financial advisor may know the PE firm is a reliable partner and always sticks to its offers.

4 Data & Methodology

For the better understanding of our relationship analyses, it is important to keep in mind that we have essentially worked with two different databases: the *deal database* with 20,643 PE and strategic deals, which includes important deal information (e.g., target EV/EBITDA multiples), and the 76,747 transactions in the *relationship database* with information on acquirer-advisor relationships of PE and strategic deals.

4.1 Data sample & statistics

Deal database

Of the 20,643 individual deals in our database, 4,402 are PE deals and 16,241 are strategic deals. In order to circumvent selection bias, we sourced our PE information from four different databanks: Factset, Preqin, Thomson One, and Capital IQ. We used Factset and especially Preqin for GP and fund information. Note that all our 16,241 strategic deals come from Thomson One. Databases do not operate with the same unique keys, so the likelihood of including redundant deals when combining databases with such a large number of deals would have been high. On the PE deal side, we did, however, merge deal information extracted from Thomson One, Capital IQ, and Preqin in order to avoid selection bias. Our final dataset of 4,402 PE deals consist to 31% of information gathered from Thomson One, 65% of Capital IQ and 4% come from Preqin. We deleted any redundancies to the best of our knowledge. Overall, we used cross-sectional data for the time period 01/01/1985-31/07/2013. We followed existing literature and removed deals with negative EV/EBITDA multiples (approx. 400 deals) to exclude pure restructuring cases from our PE and strategic data sample (Achleitner et al., 2011). We also deleted Real Estate, Finance, and Government-related deals (approx. 800 deals) due to deal peculiarities in these three industries. We made sure that financial sponsors only include PE firms and excluded hedge funds and other financial sponsors (approx. 600 deals). Moreover, we removed all deals in which we could not clearly identify the acquirer as a PE firm by matching them to the Preqin GP list (approx. 500 deals). We also ensured only completed deals are included in our list (removed approx. 500 cancelled and announced deals). Lastly, we deleted any kind of repurchases and self-tenders (approx. 150 deals). Through this stringent deal filter we removed almost 3,000 PE deals from our original deal base and, thus, ended-up with a total of 4,402 deals.

We separated our deal sample into entry deals and exit deals. Entry deals are deals in which a PE firm buys a target from a strategic seller. Exit deals are transactions in which a PE firm sells a target to a strategic buyer. Note that we only cover trade sales in our exit sample; IPOs – a common PE exit form – or other exit types are not covered. We explicitly left out sec-

ondary deals (a combination of entry and exit deals: a PE firm sells a portfolio company to another PE firm). Despite being an increasingly popular area of research, literature agrees that this type of deal often has its own peculiarities (e.g., Degeorge et al., 2014), which needs to be assessed separately.

Table 1 gives an overview of our data sample. 53% of our PE deals are entry deals. Consumer product deals make up the largest industry group both in PE and strategic deals (29% and 22%). North America is by far the biggest market for the PE industry (48% of all deals). The vast majority of our deals (both PE and strategic) are developed market deals. We collected deals from all over the world – including 19% emerging market deals – to cover the full global deal spectrum. Among the most important deal characteristics are whether a deal was (i) a majority takeover, (ii) friendly or hostile, and (iii) whether the target was listed or private. Most of our PE and strategic deals are majority takeovers (75% and 88%). Also, the deal attitude of most deals is friendly both for private equity and strategic buyers (91% and 84%). The number of listed targets is lower among our PE target group than among strategic targets (65% vs. 84%). Examining both listed and private targets was of great importance to us, especially as other studies tend to focus on listed targets only (e.g., Bargeron et al., 2008). 24% of our PE deals are club deals, i.e., more than one PE firm was involved on the entry and/or exit side. Club deals add a further layer of complexity to deal analysis as more interest groups and advisors are involved.

[Insert Table 1 about here]

Table 2 underlines how the deals of our data sample vary by transaction and financial statement characteristics. Both, PE and strategic deals differ significantly in terms of these characteristics. We observe that across all deals target EV/EBITDA multiples are larger in strategic deals – both by mean and median. The explanatory power of this, however, is fairly limited as deals are not yet benchmarked. Also negotiation periods and leverage are higher among strategic targets. Transaction values are larger in PE deals. EBITDA and enterprise values of targets in strategic deals are larger than their counterparts in PE – however, only in terms of the mean. Testing for the mean differences between PE and strategic deals we find that all are significant at least at the 5% level (t-test). The number of outliers that we have in our data sample explains the different outcomes between mean and median figures. The large standard deviation for each of the characteristics is also proof for this. Controlling for these outliers, we winsorize deal characteristics at the 1% significance level in our regressions.

[Insert Table 2 about here]

We also compiled comprehensive lists of GP and fund characteristics based on information from Thomson One, Preqin, Factset, and also Capital IQ in order to control to what extent fund and GP specific characteristics may affect their M&A performance. Please refer to Appendix 2 and 3 for further details.

Relationship database

We drew our information on the acquirer-advisor relationships from Thomson One and Capital IQ deals. As we only needed information on investment date, acquirer, advisor, and type of deal (no financial information required), we could use a broad range of deals – 76,747 transactions in total. For each of these deals we matched acquirers with advisors according to our three relationship types (as defined in Section 3). We then linked these relationships with the 4,402 PE deals as well as the 16,241 strategic deals of the deal database. For our PE deals, we managed to match 631 deals for relationship (1) and 274 for relationships (2) and (3). For the strategic deals, we matched 7,356 deals (relationship (1)) and 7,174 deals (relationships (2) and (3)). Table 3 gives an overview of our acquirer-advisor relationship figures. We see that PE acquirers tend to conduct on average two times more deals than strategic acquirers (Column C). This is no surprise as buying portfolio companies is part of a PE firm's daily business. Interestingly, PE firms only conduct about one and half time more deals with the same advisor as strategic acquirers (Column H). We see that generally relationships between PE acquirers and their financial advisors are – as compared to strategic advisors – rather weak. Long-lasting relationships seem rare.

[Insert Table 3 about here]

4.2 Benchmarking of M&A deals (Strategic vs. PE firms)

Accurate benchmarking is vital for the credibility of our findings. We cannot simply compare the EV/EBITDA multiple of a deal with the average multiple of a random group of other deals. As documented in Table 2, we know that on average PE firms tend to acquire different companies as compared to strategic buyers. For each deal (both PE and strategic) we therefore collected a set of strategic peer group deals which resemble a deal in four criteria:

a. Same investment year
b. Same target region (NA, WE, RoW)
c. Same type of market (Developed vs. Emerging)
d. Same target industry (Consumer Products, Energy, Healthcare, Industrials, Materials, Technology, Telecommunications based on NAIC and SIC codes)

This matching algorithm allows us to compare PE vs. strategic buyers on a univariate level. We gain a first impression, if PE firms indeed pay (receive) less (more) for the companies they acquire (sell) as compared to strategic players. Figures 2A and 2B illustrate that PE firms tend to buy cheaper than their respective strategic peers. For PE exit deals, there is no real trend in recent years and we do not observe that PE firms obtain on peer-group adjusted level higher valuations as their strategic counterparts. In unreported robustness tests, we validated our benchmarking methodology by modifying the set of benchmarking criteria. We added a 6-months-time-smoothing factor, i.e., a deal in October 2010 would account to 8 months to 2010 and to 4 months to 2011 and included the enterprise value (with a transition corridor of +/- 50%) as additional criteria besides our 4 existing ones. Both tests yielded the same results.

[Insert Figure 2 about here]

4.3 Regression models

We used two types of OLS regression models in order to address the main research questions of our paper. They vary in terms of independent and dependent variables but apply the same set of deal target control variables and fixed effects. Deal control variables (C) are deal characteristics that drive the differences between PE and strategic transactions (see Table 2 and Table 3). We focused on seven key deal characteristics most commonly used in existing M&A literature to control for deal characteristics: enterprise value (e.g., Achleitner et al., 2011), ROA (e.g., Fidrmuc et al., 2012), leverage (e.g., Axelson et al., 2013), negotiation power (e.g., Bargeron et al., 2008), deal attitude (e.g., Flanagan and O'Shaugnessy, 2003), and listed target dummy (e.g., Bargeron et al., 2008). We also included a majority takeover dummy to account for the difference in majority and minority takeovers. Another commonly used deal characteristic is the deal payment method (e.g., Bargeron et al., 2008). Unfortunately this information is reported only in few cases in our data sample so that we would have lost numerous observations if we had included it. However, we tested our hypotheses with this additional control variable in unreported regressions and our findings remain the same. To further mitigate concerns that our results are driven by factors unrelated to our independent variables, we controlled for industry, region, and investment year. These fixed effects (FE) are common practice in the M&A literature (e.g., Madura et al., 2012). We decided not to include PE firm or fund fixed effects into our models. Appendix 7 shows why: none of the GP and fund characteristics that we controlled for had significant impact on the EV/EBITDA multiple. There appears to be no pattern of which firms or funds significantly drive our results.

In all regression models we estimated standard errors using the Huber-White sandwich estimators (Huber, 1967). It allowed us to conduct OLS regressions with heteroscedasticity-consistent standard errors. In the following we explain specific characteristics of our two regression models.

A. Do PE firms achieve discounts in M&A transactions compared to strategic buyers?

$$\text{(A)} \qquad \log(DM)_i = \alpha_i + \beta \cdot PE_i + \gamma \sum_{i=1}^{7} C_i + \delta \sum_{i=1}^{3} FE_i + \varepsilon_i \,,$$

where $\log(DM_i)$ is the log of the *deal multiple* of deal i. A deal multiple is the ratio of target enterprise value and target EBITDA (EV/EBITDA multiple). Deal multiple is a commonly used dependent variable by experts conducting research in M&A transaction pricing (e.g., Achleitner et al., 2011). For regression model A, we included both PE and strategic deals. The independent variable is the *dummy PE*, which is 0 for strategic deals and 1 for PE deals. C_i are our seven control variables ((i) log(Enterprise Value), (ii) return on assets, (iii) leverage, (iv) majority takeover, (v) negotiation period, (vi) deal attitude, and (vii) private/public target) and FE_i are our three fixed effects ((i) target industry, (ii) target region, (iii) investment year).[1] Target industries were grouped based on SIC Codes, NAIC Codes and overall company business descriptions. We also created subsamples to investigate on the individual effects of our two deal types (entry and exit) on the deal multiple.

B. Do PE firms and/or strategic acquirers benefit from strong relationships to financial advisors?

In the second part of our paper, we analyze to what extent the relationships an acquirer maintains to financial advisors impact the discount he pays in a M&A transaction. Accordingly, we have defined the following regression model:

$$\text{(B)} \quad DMD_i = \alpha_i + \beta \cdot AR_i + \theta \cdot AQDA_i + \vartheta \cdot ADDA_i + \varrho \cdot FA_i + \gamma \sum_{i=1}^{7} C_i + \delta \sum_{i=1}^{3} FE_i + \varepsilon_i \,,$$

where DMD_i is the *normalized deal multiple delta* of deal i. The normalized deal multiple delta is the difference of the deal multiple and the respective benchmark multiple divided by the benchmark multiple. The benchmark multiple is the average peer group multiple of a deal (see section 4.2). The more negative the deal multiple delta, the smaller the deal multiple compared to the benchmark multiple, i.e., the larger the discount. We normalized this term in order to account for size differences in the delta:

[1] Please refer to Appendix 1 for detailed definitions of the variables.

$$DMD_i = \frac{PE\ deal\ multiple_i - Benchmark\ multiple_i}{Benchmark\ multiple_i}$$

Our three *acquirer-advisor relationships* serve as independent variables *AR* as we are interested in the impact of these relationships. We controlled for *acquirer deal activity* ($AQDA_i$) to ensure that our results are not driven only by large acquirers. $AQDA_i$ is the number of deals in our relationship database that a particular acquirer completed in the 5 years before and after deal i. At the same time, we did not only want the most active financial advisors to drive our results. That is why we also controlled for *advisor deal activity* ($ADDA_i$). $ADDA_i$ is the number of deals in our relationship database in which a particular advisor participated in a transaction. We also control for the number of financial advisors involved in deal i (FA_i) as groups of financial advisors might have a different negotiation power than advisors acting on their own. C_i are our seven control variables and FE_i are our three fixed effects. We used regression model B to understand whether PE acquirers benefit from strong advisor relationships. As we also wanted to know whether strategic acquirers benefit from these relationships, we ran the same regression with our strategic acquirer sample.

5 Empirical Results

5.1 Private equity discounts in M&A transactions

Controlling for deal and company characteristics, we first examine whether PE firms achieve lower transaction prices than their strategic peers. Table 4 summarizes our findings. We established earlier that PE deals tend to differ from strategic deals (e.g., larger transaction values). Column 1 shows the effect of key deal characteristics on the EV/EBITDA multiple. Enterprise value, return on assets, leverage, and the majority takeover and listed target dummies are significant at the 1% significance level. An increase in enterprise value comes along with an increase in EV/EBITDA. Also majority takeovers seem to have a positive effect on the multiple. Increases in ROA, leverage, and negotiation period, on the other hand, have a negative impact on the EV/EBITDA multiple. This is even more extreme for the listed target dummy. We created subsamples of our deals in order to investigate whether only extreme target characteristics drive our EV/EBITDA multiples. Appendix 5 shows that this is not the case and that our results are significant both for values above and below the target characteristic average. We also see that the results remain significant for all target characteristics within the 25^{th} and 75^{th} percentile. We conclude that no (extreme) group of target characteristics drive the impact on EV/EBITDA multiples but characteristics across the range. The significance of the deal and target characteristics

in the main regression and in the Appendix tests proves it is reasonable to include them as control variables.

Columns 2 and 4 of Table 4 show the effect of PE type dummies on the EV/EBITDA multiple. We see that multiples are generally significantly lower in PE entry deals than in comparable strategic deals. The results for entry deals are significant at the 1% level and we obtain a logarithmized discount of 0.23, which means that on average PE firms pay 20% less than strategic firms[2]. We thus prove in a multivariate framework what we already saw graphically in the univariate setting (see Figure 2). Bargeron et al. (2012) find that public firms pay a 63% premium to PE firms and a 14% premium to private operating firms. These results remain significant at the 1% level even when controlling for our seven key deal characteristics (see Column 3 of Table 4). In this case, we yield a logarithmized discount of 0.19, which equals 18%. In turn, we only see weak empirical prove for a positive PE effect in case of PE exit deals (Column 4). When controlling for deal characteristics (see Column 5) the significance of this effect even disappears completely. We argue that this is partially due to the fact that our deal sample is limited to trade sales (e.g., strategic buyers) only on the exit side and does not include IPOs as well as secondary sales. PE firms tend to take those portfolio companies public (IPO) that have proven to be success stories during the holding period. By not including these high performers in our deal base, our database will be biased towards not so well performing companies that are likely to generate lower prices.

Why do PE discounts in M&A (entry) transactions exist? We first need to understand the differing motivations of PE firms and strategic firms to acquire or buy stakes in other companies. PE firms and other financial sponsors usually look for opportunities from a financial perspective and for limited investment periods. They will be focusing more on financial improvements and operational excellence than strategic buyers in the light of a near exit. Strategic buyers will consider opportunities from an industrial point of view (e.g., strategic rationale, product portfolio enhancement, geographical coverage, and synergies). They know they will generate synergies with their investment in the medium-to-long-term and are willing to pay the extra dollar for this. PE firms usually cannot create synergies within their investments. *Synergy surcharges* are also the reason why strategic acquirers pay less attention to multiple cycles. They try to buy when a target that is suitable from an operational point of view becomes available. PE firms, at least those with moderate pressure to invest, can afford to enter at the low of a *pricing cycle*. Often price differences originate from deal terms and conditions and sometimes from a more efficient

[2] Assuming an average EV/EBITDA multiple of 21.3 for strategic deals.

deal structuring on the part of financial sponsors. PE firms tend to incentivize the target's management and shareholders and to reward them at exit if performance hits a certain threshold. Hence, they pay a lower multiple at entry. Furthermore, industry practitioners also argue that *negotiations* certainly play a role. PE firms are often more encouraged to drive a hard bargain as GPs are usually involved in the deal with their own money (carried interest). For PE professionals, lower entries will mean higher financial rewards. Corporate CEOs, on the other hand, are investing their shareholders' money and generally have less personal incentive. Moreover, PE professionals tend to have wide *experience* in deal making. It is their daily bread and butter. Often psychology is key to reaching an agreement and PE professionals have an experienced approach to handling important discussions and outperforming competition. We saw in Table 2 that negotiation periods tend to be shorter in PE deals which proves our point of GPs' strong negotiation experience. When we put ourselves in the shoes of the target's management, we might also find a certain *tendency to selling* to PE than to a strategic buyer. Managements often appreciate PE's short-to-medium-term investment horizon, financial knowledge, industry expertise, and financial incentives. Strategic buyers are less accustomed to use incentive packages. Their long-term investment horizon is sometimes less attractive for the target's management team. Of course, there are cases, especially among family business owners, where selling to a financial sponsor is never an option.

We conducted robustness tests with various subsamples (Appendix 6). We found that listed targets drive the results as we lose significance when only taking private targets into account. Interestingly, when only accounting for club deals (they make up almost 25% of our PE deals), we received significant results both on the entry side (PE discount) and on the exit side (PE surcharge). Groups of PE firms working together in a deal seem to bundle their negotiation power particularly well. We also took subsamples for buyout deals, friendly takeovers, majority takeovers, developed market deals, and the investment period 2005-2013 and found that they all produce significant results on the entry side but not (all of them) on the exit side.

[Insert Table 4 about here]

5.2 Acquirer-advisor relationships

In a second step, we targeted acquirer-advisor relationships for private equity firms in order to explain the private equity discount detected in step one. We focused our analyses on PE entry deals as we hardly found any difference in deal pricing in PE exits when comparing them

to strategic deals. The fact that our deal sample only includes trade sales on the exit side also encouraged us not to further discuss exit deals.

Panel A in Table 5 provides evidence for the main finding of this paper: certain advisor relationships help acquirers to achieve lower transaction prices. Panel B demonstrates that strategic acquirers do not manage to take advantage of these relationships – no matter how active they are in the M&A market. For each relationship type (R1-R3), we conduct three regressions for Panel A and Panel B, respectively (see Table 5). Besides deal characteristics and industry, region as well as year fixed effects, we also control for acquirer and advisor deal activity as well as for the number of financial advisors involved in the deal. In robustness regressions we checked whether the results of Table 5 also hold true when only taking previous relationships into account (and not accounting for future relationships). Appendix 7 shows that our results do not change.

Relationship (1): acquirers' relationships with their financial advisors five years before and after deal i

We know from existing literature, e.g., Allen et al. (2002), that advisors have the power to utilize their information gathering to influence purchasing prices. However, our data shows that PE and strategic acquirers do not benefit from strong relationships with their financial advisors in price negotiations. Column 1 shows that this relationship has no statistical and economic significance on the multiple deltas. Also, after controlling for acquirer or advisor activity, the results do not change. We believe this is not surprising. There might be a conflict of interest for financial advisors on the buy-side. Acquisition advisors only receive their fees if the deal is executed (while target advisors get their fees no matter to which buyer the target is sold). The lower the price, the more likely the target will not agree to the deal, especially if there is more than one bidder involved. Moreover, we established earlier that PE firms but also big strategic corporations are experienced deal makers. They usually know how to approach price negotiations. Their financial advisors are usually not able to push for further price reductions.

Relationship (2): acquirers' relationships with their financial advisors five years before and after deal i if advisors worked with acquirers' targets in t=0

We see in Table 5 (Column 4) that for every deal the PE firm and the financial advisor worked on in the preceding/future five years, the multiple delta will go down by 0.06 (normalized). We obtain this result to a 5% significance level. It might be the notion of certainty that drives the result: if the advisor knows the acquirer is likely to complete the deal, he might be more inclined to close the deal with this acquirer. Another explanation is linked to potential fu-

ture business with the acquirer: do financial advisors push for a lower purchase price of the targets they are advising in order to remain in good terms with the PE firm that is seeking to acquire the target? They certainly do not want to jeopardize the relationships with their PE clients. Francis et al. (2012) contend that financial advisors are becoming more and more aggressive in retaining existing clients. We saw in Table 3 that our data suggests that the number of deals per acquirer is about 50% higher for PE firms than for strategic acquirers. So, one could certainly argue that particularly active PE firms drive this result as they naturally have strong relationships with financial advisors. Following the same logic, one could also argue that the big investment banks drive the result as they naturally maintain strong relationships with PE firms. However, even when controlling for PE firm and advisor deal activity or for the number of advisors involved, our results remain significant.

Relationship (3): acquirers' relationships with target financial advisors five years before and after deal i

Relationship (3) confirms our finding from relationship (2): the bank that advises the target company can be of high importance for PE firms. Relationship (3) says that a *direct* relationship between acquirer and advisor is not even necessary (at least we are not checking for any direct relationships). It shows that the more often the same bank advises potential portfolio companies of a PE firm, the cheaper the purchasing price for these targets. There is only an *indirect* relationship between the financial advisor and the PE firm, and there is usually no contract or official working agreement between the target advisor and the acquirer, but this *indirect* relationship that they maintain is far from trivial. In fact, for every additional deal these two parties are involved in as acquirer and target advisors in the previous and future five years of a deal, the delta multiple decreases by 0.09 (normalized). The economic effect is even higher than in relationship (2). The statistical significance is the same (5% significance level). Again, our findings remain significant even when controlling for acquirer and advisor deal activity and for the number of advisors involved. All results are statistically insignificant for relationship (2) in Panel B. Strategic acquirers do not seem to maintain these indirect relationships with target financial advisors. At least they do not seem to benefit from them economically. Do financial advisors treat PE buyers favorably in order to liaise with them in the long-term? Banks know that PE firms are involved in a large number of deals. Being in good terms with a PE firm might secure them lucrative future business. Francis et al. (2012) do not only argue that financial advisors are becoming more and more aggressive in retaining existing clients but also in winning future ones.

[Insert Table 5 about here]

The above results provide us with insights on the unique role of advisors in M&A deal pricing. Through controlling for acquirer and advisor deal activity, we ensure that the results are not only driven by the largest PE firms. However, PE firm deal activity and strategic acquirer deal activity are significantly different in our data. 53% of the PE acquirers in the 274 deals that we use to prove the significance of relationships (2) and (3) are involved in more than 10 deals in our relationship database. The distribution is different on the strategic side: we use 7,174 deals to prove the insignificance of relationships (2) and (3) for strategic acquirers. In only 10% of these deals are strategic acquirers involved in more than 10 deals. Furthermore, the average deal activity of all 274 PE acquirers is on average 21.1 deals, while the average deal activity of the 7,174 strategic acquirers only amounts to 4.5 deals. Not surprisingly, PE firms are much more active in the M&A market than most strategic firms. The situation is similar in relationships (1). Hence, we split our samples into two subsamples with (i) acquirers with less than 10 deals and with (ii) more than 10 deals. Table 6 shows that the impact of relationship (1) on multiple deltas remains largely insignificant even when splitting the sample into two subsamples based on deal activity. We see a slight significance on the strategic side. Table 6 also shows that the significant results of relationship (2) are driven by PE firms that appeared at least 10 times as acquirers in our relationship database. Every additional deal lets the multiple delta drop by 0.05 (normalized) with a significance level of 10%. We find no such significance for relationships in which PE acquirers are involved in 10 or less than 10 deals only. Deal activity seems to play no role for relationship (3) deals: both PE subsamples are significant to the 5% and 1% significance level, respectively. Even smaller PE firms seem to successfully push for lower prices when interacting with the same target financial advisor. We make a surprising observation in Column 12: delta multiples actually increase the stronger the relationship between strategic acquirers with more than 10 deals and advisors. Large strategic acquirers apparently do not benefit from longstanding interactions with target advisors.

[Insert Table 6 about here]

6 Discussion of Results

Why do strong relationships between acquirers and advisors lead to transaction discounts and why do we see this effect only in PE deals and not in strategic deals? The better the target advisors know the buy-side PE firms, the more likely it is that the deal will actually go through (e.g., Morgan Stanley knows that KKR completes 90% of the deals they are bidding for). This *notion of certainty* will be communicated to the target company which will then be more inclined

to sell to a PE firm. There are in fact strong reasons why the probability of deal completion should be higher when a PE firm is involved. One reason is better access to financing. Another reason is regulation: PE firms are generally not seen as a regulatory threat as they acquire rather than merge operations. Strategic acquisitions are more strictly monitored by regulators (e.g., Anti-Monopoly Office (AMO) and other antitrust divisions and cartel offices). Target firms and advisors might be cautious to sell to a strategic acquirer if there is the possibility that the deal will be called back by the regulators. This is also a potential reason why we see significance in our findings for PE firms but not for strategic acquirers – even with high acquirer deal activity: KKR is unlikely to become a higher regulatory threat even after completing a large number of deals; but General Electric, for example, might become a more interesting target for antitrust divisions as they complete more deals (especially if these deals all take place in one region or industry). Target financial advisors that usually work with the PE buying party (relationship (2)) might also grant these buyers exclusive access to the deal (*proprietary deal sourcing*) in which competitive bids are non-existent and lower prices can therefore be pushed through more easily. We do not question the fact that financial advisors strive to provide best services for their clients. But *conflicts of interest* might arise as financial advisors are highly interested in maintaining (relationship (2)) or starting (relationship (3)) long-lasting relationships with their PE clients. PE firms do not pay higher fees than their strategic peers. On the contrary, PE firms are particularly prudent to keep fees low as they are involved in a large number of deals. A more likely reason is the sheer deal volume of PE firms. PE firms provide highly *lucrative business* for M&A advisors as they are constantly looking for new targets. Most PE firms have a closer look at targets at least four times per year, while most strategic acquirers only buy occasionally. Furthermore, they are interested in financing their deals with high levels of *leverage*. The more favorably advisors treat PE firms, the more likely they will work with them in the future.

Despite numerous reasons why certain forms of strong relationships between PE firms and financial advisors might lead to PE discounts in M&A transactions, there are certainly arguments that speak against it. We learned earlier that reputation is vital for acquirers' choice of advisors. Advisory is primarily a trust business. Why should banks *jeopardize their reputation* and feed rumors that they treat PE firms better than strategic acquirers? Financial advisors will lose credibility if they agree to fix deals at lower prices just to ingratiate themselves with the PE firms. How do PE firms know that they will not also push for lower prices when the PE firm on the sale side just to make themselves popular with the buy-side parties? Moreover, it is not clear whether advisors actually prefer to work with PE firms over strategic firms. It is true that, on

average, they are more active in the M&A market but they often also pay lower advisor fees. The additional income for banks through commercial loans is often eaten up by these lower fees.

7 Conclusion

We build on and confirm existing literature that suggests that PE firms manage to buy with lower EV/EBITDA multiples than their strategic peers in comparable transactions. Our data shows that strong indirect relationships with financial advisors help *PE firms* to achieve these favorable prices. Interestingly, this is not true for relationships between *strategic acquirers* and their financial advisors. We do not argue that PE firms generally have stronger relationships with their advisors (in fact, strategic acquirers often maintain much tighter bonds with their banks) but we do see that the stronger the indirect relationship the lower the deal price. We argue that private equity firms manage their relationships with financial advisors more professionally. They allow competition between them by diversifying the group of advisors. The significance of our results depends on the type of relationship we are looking at. *Indirect* relationships with target advisors lead to PE discounts.

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Figure 1: Acquirer-advisor relationships (based on example deal i)

Figure 1 illustrates the relationship frameworks that we are investigating in our analyses. Relationship 1 (R1) counts the number of times an acquirer was advised by a specific financial advisor when acquiring a company within the previous five and future five years. Relationship 2 (R2) looks at the number of times an acquirer was advised by a specific financial advisor when acquiring a company within the previous five and future five years of a deal. At the deal itself, this advisor advised the target. Relationship 3 (R3) looks at the number of times an acquirer bought a company that was advised by the same specific financial advisor within the previous five and future five years.

Figure 1A: Relationship 1 (R1)

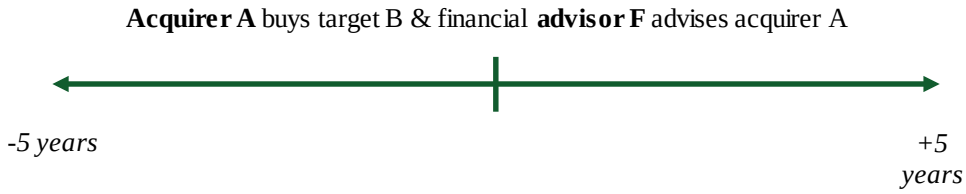

Figure 1B: Relationship 2 (R2)

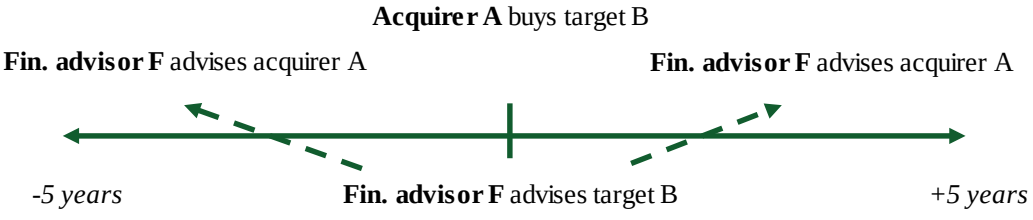

Figure 1C: Relationship 3 (R3)

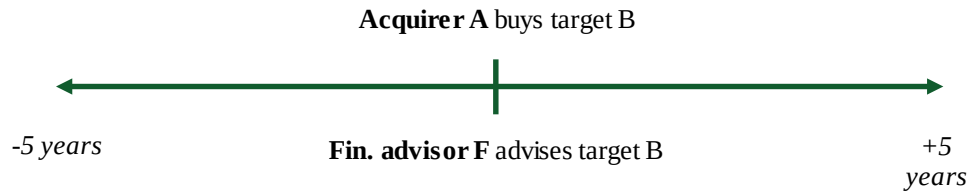

Table 1: Deal summary statistics

Table 1 includes summary statistics of all 20,643 private equity and strategic deals between 01/01/1985 and 31/07/2013 of our data sample. The total sample comprises realized M&A deals with positive EV/EBITDA multiples. Deals by industry are deal target industries, which are a combination of SIC Codes, NAIC Codes and overall company business descriptions (Real Estate, Finance, Government are excluded). Developed markets include USA, Canada, Western Europe, Japan, and Australia/New Zealand. Emerging markets include: Asia (excl. Japan), Africa, Eastern Europe, Latin America, and Middle East. We define developed/emerging markets according to the criteria of the International Monetary Fund (2014). Majority takeovers are deals in which the acquirer purchased at least 51% of the target. Friendly takeovers are deals in which the deal attitude was flagged as 'friendly'. Listed targets are deals in which the target companies were publicly listed in one or more stock exchanges. Club deals are deals with at least two GPs on the buyer and/or seller side. Data was consolidated from 3 different sources: Thomson One, Capital IQ, and Preqin. Redundant deals are excluded. See Appendix-Table 1 for variable definitions.

	PRIVATE EQUITY (PE)				**STRATEGIC**		**PE & STRAT.**	
	ENTRY	**EXIT**	**TOTAL**	***(TOTAL)***	**TOTAL**	***(TOTAL)***	**TOTAL**	***(TOTAL)***
DEALS	**2,347**	**2,055**	**4,402**		**16,241**		**20,643**	
share of total PE deals	53%	47%	100%					
DEALS BY INDUSTRY								
Consumer products	*797*	*463*	1,260	*(29%)*	*3,633*	*(22%)*	4,893	*(24%)*
Energy	*144*	*188*	332	*(8%)*	*1,997*	*(12%)*	2,329	*(11%)*
Healthcare	198	256	454	*(10%)*	1,115	*(7%)*	1,569	*(8%)*
Industrials	474	349	823	*(19%)*	2,682	*(17%)*	3,505	*(17%)*
Materials	207	149	356	*(8%)*	2,284	*(14%)*	2,640	*(13%)*
Technology	341	534	875	*(20%)*	2,474	*(15%)*	3,349	*(16%)*
Telecommunications	186	116	302	*(7%)*	2,056	*(13%)*	2,358	*(11%)*
DEALS BY REGION								
North America (NA)	979	1,135	2,114	*(48%)*	6,463	*(40%)*	8,577	*(42%)*
Western Europe (WE)	609	375	984	*(22%)*	4,023	*(25%)*	5,007	*(24%)*
Rest of world (RoW)	759	545	1,304	*(30%)*	5,755	*(35%)*	7,059	*(34%)*
DEVELOPED MARKETS VS. EMERGING MARKETS								
Developed markets (DM)	1,909	1,822	3,731	*(85%)*	13,080	*(81%)*	16,811	*(81%)*
Emerging markets (EM)	438	233	671	*(15%)*	3,161	*(19%)*	3,832	*(19%)*
MAJORITY TAKEOVERS								
Yes	1,643	1,673	3,316	*(75%)*	14,222	*(88%)*	17,538	*(85%)*
No	539	382	921	*(21%)*	2,019	*(12%)*	2,940	*(14%)*
FRIENDLY TAKEOVERS								
Yes	2,030	1,955	3,985	*(91%)*	13,576	*(84%)*	17,561	*(85%)*
No	150	97	247	*(6%)*	2,611	*(16%)*	2,858	*(14%)*
LISTED TARGETS								
Yes	1,725	1,128	2,853	*(65%)*	13,585	*(84%)*	16,438	*(80%)*
No	451	924	1,375	*(31%)*	2,570	*(16%)*	3,945	*(19%)*
CLUB DEALS								
Yes	366	712	1,078	*(24%)*	n/a		1,078	(24%)
No	1,981	1,343	3,324	*(76%)*	n/a		3,324	(76%)
DEALS BY SOURCE								
Thomson One	1,034	330	1,364	*(31%)*	16,241	*(100%)*	17,605	*(85%)*
Capital IQ	1,148	1,725	2,873	*(65%)*	-	*(-)*	2,873	*(14%)*
Preqin	165	-	165	*(4%)*	-	*(-)*	165	*(1%)*

Table 2: Portfolio company statistics

Table 2 includes key transaction information and financial statement information of the target companies in our database. All statistics in the two panels are at deal announcement and are winsorized at the 1% significance level. Negotiation period is the time elapsed between deal announced date and deal effective date. Return on assets is the ratio of Total Income over Total Assets. Leverage is the ratio of Total Debt over Enterprise Value. Financial statement statistics are as of last-twelve-months. All transaction statistics as well as EBITDA, leverage, and total assets include positive figures only. We performed a t-test on the mean difference between private equity and peer group deals. In the 'Mean (t-test)' Column, *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. Statistics in Table 2 are not exhaustive - our data sample includes a large variety of further data. See Appendix - Table 1 for more detailed variable definitions. See Appendix-Table 1 for variable definitions.

Table 2A: Transaction statistics

ENTERPRISE VALUE/ EBITDA-MULTIPLE	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	4,402	17.8	***	9.5	32.1	3.3	51.2
Strategic	16,241	21.3		10.0	43.2	2.7	72.5
Total	20,643	20.6		9.9	41.2	2.8	67.8

ENTERPRISE VALUE (USD mn)	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	4,401	960	***	229	2,634	13	3,694
Strategic	16,241	1,132		170	3,044	8	5,504
Total	20,642	1,093		181	2,945	8	5,077

TRANSACTION VALUE (USD mn)	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	4,390	539	***	136	1,201	4	2,572
Strategic	16,238	476		56	1,323	2	2,506
Total	20,628	490		70	1,301	2	2,522

NEGOTIATION PERIOD (Days)	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	4,237	68	***	52	73	0	200
Strategic	16,158	86		61	99	0	284
Total	20,395	82		59	94	0	267

Table 2B: Financial statement statistics

EBITDA (USD mn)	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	4,332	101	**	22	291	1	398
Strategic	16,241	111		16	314	1	526
Total	20,573	108		17	306	1	497

RETURN ON ASSETS (%)	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	3,674	3.64	**	4.00	11.31	-13.14	19.34
Strategic	16,056	4.16		3.83	10.20	-10.29	19.12
Total	19,730	4.07		3.85	10.38	-10.76	19.14

LEVERAGE (%)	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	3,505	27.0	***	19.5	27.8	0.0	79.4
Strategic	13,870	30.5		22.3	29.3	0.5	90.0
Total	17,375	29.8		21.7	29.0	0.2	88.0

TOTAL ASSETS (USD mn)	Obser-vations	Mean	*Mean (t-test)*	Median	Std. Dev.	5th percentile	95th percentile
Private Equity	3,722	867	**	179	2,607	13	3,202
Strategic	16,112	953		151	2,617	6	4,498
Total	19,834	932		157	2,578	7	4,270

Table 3: Relationships of acquirers with financial advisors

Table 3 provides background figures on our acquirer-advisor relationships. The Table shows relationship information for PE acquirers and strategic acquirers. Columns A-C display information on the number of deals and acquirers that the relationships are based on. Columns D-G also show information on the number of deals by acquirer but with the same advisors, i.e., these Columns provide us with information on the number of deals with specific acquirer-advisor relationships.

		A	B	C	D	E	F	G
Relationships	**Acquirer type**	**Deals**	**Acquirers**	**Average deals/ acquirer**	**Average: deals/acquirer with same advisor**	**Maximum: deals/acquirer with same advisor**	**95th percentile: deals/acquirer with same advisor**	**Std.Dev.: deals/acquirer with same advisor**
R1: Relationships with own financial advisors in previous & future 5 years	**PE**	6,176	905	6.8	**2.9**	41	8	4.8
	Strategic	19,442	6,357	3.1	**1.9**	61	5	2.3
R2: Relationships with own financial advisors in previous & future 5 years that advise targets in t=0	**PE**	5,686	647	8.8	**0.4**	6	3	1.1
	Strategic	18,118	5,413	3.3	**0.2**	28	1	0.8
R3: Relationships with target financial advisors in previous & future 5 years	**PE**	4,693	889	5.3	**1.3**	5	3	0.7
	Strategic	22,632	6,386	3.5	**1.4**	11	3	0.9

Figure 2: EV/EBITDA multiples of PE deals 1995-2013

Figure 2 shows the median PE entry and exit deal multiples that GPs paid from from 1995 to 2013 (blue line). It also shows the median multiples of benchmark deals over the same time period (red line). The difference between the two lines is the delta between PE and benchmark multiples in each respective year. A benchmark group is defined as the peer group of each private equity deal based on 4 criteria: investment year, region (North America, Western Europe, Rest of World), type of market (developed vs. emerging), and industry (Consumer Products, Energy, Healthcare, Industrials, Materials, Technology, Telecommunications). The green bars represent the number of acquisitions that GPs conducted in a respective year. See Appendix-Table 1 for variable definitions.

Figure 2A: EV/EBITDA-multiples of PE entry deals 1995-2013

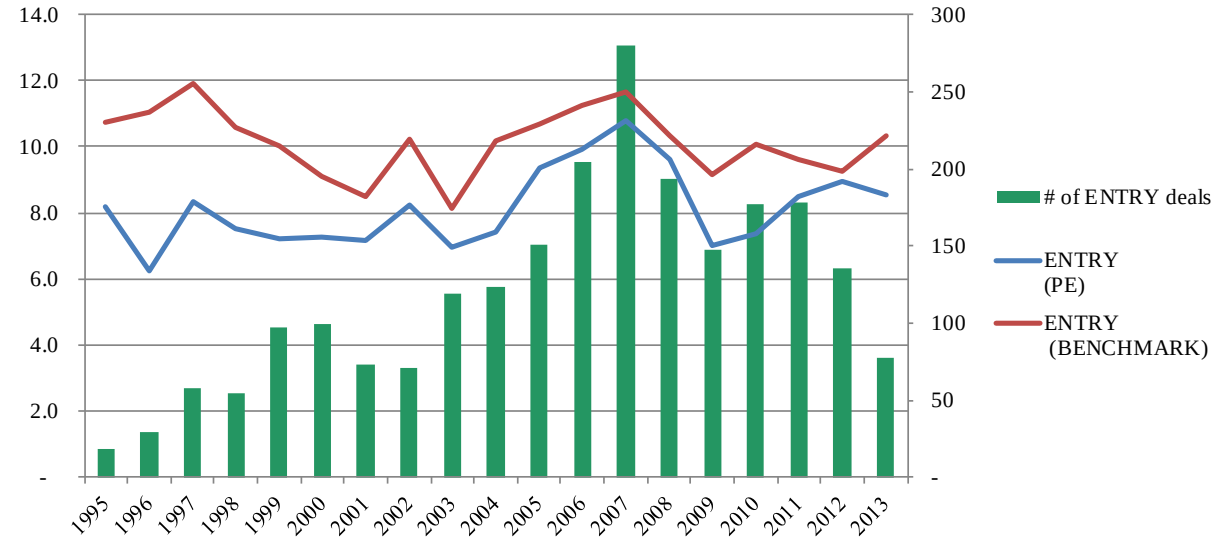

Figure 2B: EV/EBITDA-multiples of PE exit deals 1995-2013

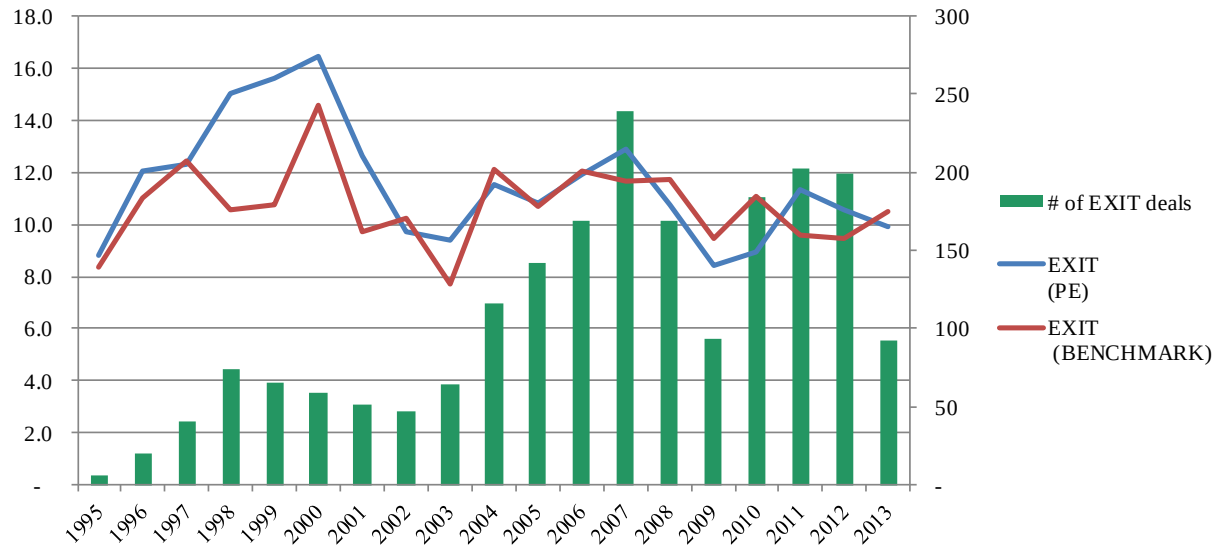

Table 4: Regression results on EV/EBITDA multiples

Table 4 presents the results of pooled ordinary least squares (OLS) regressions on the log of EV/EBITDA multiples for the investment period 1985 to 2013. Regression (1) examines the effect of our key deal characteristics (winsorized at the 1% significance level) on the EV/EBITDA multiple. Regressions (2) to (5) show the effect of the dummy variable private equity (yes/no) on the same determinant - in each case without controlling for our deal characteristics and with controlling for the characteristics (winsorized at the 1% significance level). We take fixed effects for industry, investment region, and investment year into account. Numbers in the upper rows represent the regression coefficients; numbers in brackets in the lower row represent respective standard errors. *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. See Appendix-Table 1 for variable definitions.

	Dependent variable: log(EV/EBITDA multiple)				
	PE Total	**PE Entry**	**PE Entry**	**PE Exit**	**PE Exit**
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
PE ENTRY deals		**-0.229*** **	**-0.185*** **		
		(0.020)	**(0.020)**		
PE EXIT deals				**0.041***	**0.009**
				(0.021)	**(0.022)**
log(Enterprise value)	**0.089*** **		0.088***		0.089***
	(0.004)		(0.004)		(0.004)
ROA	**-0.031*** **		-0.032***		-0.031***
	(0.001)		(0.001)		(0.001)
Leverage	**-0.011*** **		-0.010***		-0.011***
	(0.000)		(0.000)		(0.000)
Majority takeover	**0.058*** **		0.029		0.042*
	(0.019)		(0.021)		(0.022)
Negotiation period	**-0.000** **		-0.000**		-0.000**
	(0.000)		(0.000)		(0.000)
Friendly takeover	**0.005**		0.026		0.017
	(0.019)		(0.020)		(0.021)
Target is listed	**-0.250*** **		-0.246***		-0.236***
	(0.020)		(0.024)		(0.022)
Fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	1.854***	1.547***	1.904***	1.514***	1.835***
	(0.098)	(0.103)	(0.101)	(0.111)	(0.105)
Observations	17,099	18,588	15,433	18,296	15,300
R-squared	0.221	0.054	0.215	0.061	0.222
Robust standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Table 5: Impact of strong relationships with financial advisors

Table 5 displays the impact of our acquirer-advisor relationships on multiple deltas. Multiple deltas are the difference between EV/EBITDA multiples of private equity deals and EV/EBITDA multiples of their respective benchmark multiples divided by the EV/EBITDA multiples of the respective benchmark multiples. Generally, the more negative the multiple delta, the higher the private equity discount. Panel A focuses on our PE deals sample, while Panel B focuses on our strategic deals sample. Independent variables in both Panels are the three types of advisor relationships we are investigating on. R1: the number of times a GP was advised by a specific financial advisor when acquiring a company five years before and after a deal. R2: the number of times a GP was advised by a specific financial advisor when acquiring a company five years before and after a deal. This advisor advised the target at t=0. R3: the number of times a GP acquired a company that was advised by the same specific financial advisor five years before and after a deal. We control for acquirer and advisor deal activity and the number of advisors involved in the deal. We also control (but do not show in detail) for our key deal characteristics (winsorized at the 1% significance level). We take fixed effects for industry, investment region, and investment year into account. Numbers in the upper rows represent the regression coefficients; numbers in brackets in the lower row represent respective standard errors. *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. See Appendix-Table 1 for variable definitions.

Table 5 Panel A: Relationships between PE firms and financial advisors

	Dependent variable: Multiple deltas								
	PE Entry	**PE Entry**	**PE Entry**	**PE Entry**	**PE Entry**	**PE Entry**	**PE Entry**	**PE Entry**	**PE Entry**
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
R1: Relationships with buy-side financial advisors (5 years before and after a deal)	**0.012**	**0.017**	**0.012**						
	(0.018)	**(0.019)**	**(0.018)**						
R2: Relationships with buy-side financial advisors (5 years before and after a deal) that are on the target-side in t=0				**-0.056****	**-0.066****	**-0.057****			
				(0.024)	**(0.027)**	**(0.025)**			
R3: Relationships target financial advisors (5 years before and after a deal)							**-0.089****	**-0.110****	**-0.093****
							(0.043)	**(0.048)**	**(0.044)**
Acquirer deal activity		-0.001			0.006			0.006	
		(0.001)			(0.004)			(0.004)	
Advisor deal activity		-0.002***			-0.001			-0.001	
		(0.001)			(0.001)			(0.001)	
Number of advisors involved			-0.143***			0.041			0.045
			(0.046)			(0.065)			(0.066)
Deal characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.080	-0.193	0.116	-0.713**	-0.527*	-0.721**	-0.558**	-0.332	-0.562**
	(0.412)	(0.398)	(0.410)	(0.286)	(0.293)	(0.291)	(0.275)	(0.313)	(0.279)
Observations	631	631	631	274	274	274	274	274	274
R-squared	0.183	0.193	0.188	0.298	0.313	0.300	0.296	0.312	0.298

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Impact of strong relationships with financial advisors (continued)

Table 5 Panel B: Relationships between strategic acquirers and financial advisors									
	Dependent variable: Multiple deltas								
Independent variables	PE Entry (1)	PE Entry (2)	PE Entry (3)	PE Entry (4)	PE Entry (5)	PE Entry (6)	PE Entry (7)	PE Entry (8)	PE Entry (9)
R1: Relationships with buy-side financial advisors (5 years before and after a deal)	**-0.024**	**-0.031**	**-0.025**						
	(0.018)	**(0.020)**	**(0.019)**						
R2: Relationships with buy-side financial advisors (5 years before and after a deal) that are on the target-side in t=0				**-0.035**	**-0.052**	**-0.033**			
				(0.063)	**(0.069)**	**(0.063)**			
R3: Relationships target financial advisors (5 years before and after a deal)							**0.044**	**0.029**	**0.040**
							(0.063)	**(0.064)**	**(0.063)**
Acquirer deal activity		0.004			0.018*			0.015	
		(0.005)			(0.010)			(0.009)	
Advisor deal activity		-0.000			-0.001**			-0.001**	
		(0.000)			(0.000)			(0.000)	
Number of advisors involved			-0.072			-0.158***			-0.157***
			(0.050)			(0.061)			(0.061)
Deal characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.948***	0.942***	1.038***	1.109***	1.035***	1.248***	1.079***	1.004***	1.220***
	(0.292)	(0.294)	(0.298)	(0.351)	(0.353)	(0.354)	(0.354)	(0.358)	(0.357)
Observations	7,356	7,356	7,149	7,174	7,174	7,077	7,174	7,174	7,077
R-squared	0.076	0.076	0.079	0.071	0.073	0.073	0.071	0.073	0.074
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1									

Table 6: Impact of strong relationships with financial advisors – by deal activity

Table 6 is closely related to Table 5. It also displays the impact of certain acquirer-advisor relationships on multiple deltas for our PE and our strategic deals sample (see Table 5 or Appendix 1 for definitions of multiple deltas and relationship types 1-3). But in two different categories based on acquirer deal activity: Acquirer deal activity: 1-10 deals only includes deals of acquirers that were involved in up to 10 acquisition deals in the relevant time period (5 years before and after a deal) in our database, while acquirer deal activity: >10 deals includes all acquirers involved in more than 10 deals. Again, we also control (but do not show in detail) for our key deal characteristics (winsorized at the 1% significance level). We take fixed effects for industry, investment region, and investment year into account. Numbers in the upper rows represent the regression coefficients; numbers in brackets in the lower row represent respective standard errors. *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. See Appendix-Table 1 for variable definitions.

Dependent variable: Multiple deltas	**1) Acquirer deal activity: 1-10 deals**						**2) Acquirer deal activity: >10 deals**					
	PE	**Strategic**	**PE**	**Strategic**	**PE**	**Strategic**	**PE**	**Strategic**	**PE**	**Strategic**	**PE**	**Strategic**
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
R1: Relationships with buy-side financial advisors (5 years before and after a deal)	-0.078	-0.054*					0.017	-0.016				
	(0.097)	(0.032)					(0.021)	(0.035)				
R2: Relationships with buy-side financial advisors (5 years before and after a deal) that are on the target-side in t=0			-0.118	-0.052					-0.050*	-0.128		
			(0.223)	(0.078)					(0.028)	(0.109)		
R3: Relationships target financial advisors (5 years before and after a deal)					-0.691**	-0.090					-0.165***	0.406**
					(0.328)	(0.064)					(0.054)	(0.175)
Deal characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.096	0.974***	-0.313	0.970***	0.531	1.066***	5.194***	1.049	-0.465	6.225**	-0.204	6.415**
	(0.651)	(0.277)	(0.649)	-0.333	(0.750)	(0.341)	(0.700)	(0.940)	(0.479)	(2.620)	(0.498)	(2.602)
Observations	241	5,877	130	6,491	130	6,491	390	1,479	144	683	144	683
R-squared	0.189	0.089	0.390	0.075	0.439	0.075	0.313	0.095	0.483	0.164	0.509	0.170
Robust standard errors in parentheses												
*** p<0.01, ** p<0.05, * p<0.1												

Appendix

Appendix 1: Variable definitions
Appendix 1 presents definitions for the variables used in this paper. Note that by consolidating our databases, we paid great attention to making sure that variable definitions were the same in across all our databases.

Variable	Description
Deal specifications	
EV/EBITDA multiple	Ratio of the target's enterprise value (see definition below) and its EBITDA (for the last 12 months ending on the date of the most current financial information prior to the transaction).
Multiple delta	Difference between EV/EBITDA multiples of private equity deals and EV/EBITDA multiples of their respective benchmark multiples divided by the EV/EBITDA multiples of the respective benchmark multiples. Generally, the more negative the multiple delta, the lower the private equity discount.
Private equity (PE) deal	A private equity firm (GP) is the acquiror and/or the seller of a target company. For our deal sample, we identified PE firms either through their primary NAIC description or their primary VEIC code, and/or if they were listed as PE firms in the Preqin database. Note that we excluded deals involving other financial sponsors, such as hedge funds, from our data sample. All our PE deals are realized deals.
PE entry deal	A PE firm is the acquiror of the target and there is no PE firm on the target/seller side.
PE exit deal	A PE firm is the seller of the target and there is no PE firm on the acquisition side.
PE secondary deal	A PE firm is the acquiror of the target and a PE firm is also on the seller side.
Club deal	More than one PE firm is acquiring and/or selling a target company.
Strategic deal	Any deal in our data sample in which no PE firm is involved, i.e., where the target is purchased for strategic reasons only. All our strategic deals are realized deals.
Peer group/benchmark deal	A strategic deal that shares 4 main criteria with a respective deal: same investment year, same region, same type of market, same industry.
Developed market deal	The target company is located in a developed market country. Our paper follows the developed market definition of the International Monetary Fund (IMF).
Emerging market deal	The target company is located in an emerging market country. Our paper follows the emerging market definition of the International Monetary Fund (IMF).
Transaction value	Total value of consideration paid by the acquiror, excluding fees and expenses in USD.
Industry	Industries are categorized based on SIC Codes, NAIC Codes and overall company business descriptions. Our deal sample includes Consumer Products, Energy, Healthcare, Industrials, Materials, Technology, Telecommunications. Real Estate industry and Finance industry are excluded.
Region	Deals are grouped into 10 regions: Africa, Asia (excl. China & Japan), Australia & NZ, China, Eastern Europe, Japan, Latin America, Middle East, North America, Western Europe. In most cases we further aggregated this into 3 main groups (North America, Western Europe, Rest of World) as nearly 75% of our deals take place in North America or Western Europe.
Investment year	Deal effective year of our deal. We include deals between 01/01/1985 and 31/07/2013.

Portfolio company statistics

log(Enterprise value)	Log of the target company's enterprise value at deal announcement in USD. Enterprise value is calculated by multiplying the number of actual target shares outstanding from the most recent balance sheet by the offer price and plus the cost to acquire convertible securities, short-term debt, straight debt, and preferred equity minus cash and marketable securities. Winsorized at the 1%-level.
ROA	Target company's return on asset of the last 12 months ending on the date of the most current financial information prior to the announcement of the transaction (LTM) - displayed as percentage and winsorized at the 1%-level. Return on assets is the ratio of net income (LTM) and total assets (LTM). Winsorized a the 1%-level.
Leverage	Ratio of target company's total debt of the last 12 months ending on the date of the most current financial information prior to the announcement of the transaction (LTM) and its enterprise value at announcement. Winsorized a the 1%-level.
Majority takeover	The acquiror purchased at least 51% of the target.
Negotiation period	Time elapsed between deal announced date and deal effective date. Winsorized a the 1%-level.
Friendly takeover	Deal attitude was explicitly friendly (as opposed to hostile, friendly-to-hostile, neutral, etc.).
Target is listed	Target was publicly listed in one or more stock exchanges.

GP information

General partner (GP)	General partners are financial sponsors that buy private equity of operating companies either through direkt investments or funds of funds. The term General Partner is often substituted for GP, private equity firm, and PE firm are used equally in this paper. All terms have the same meaning in this paper.
GP location	Office location of the GP involved in the deal.
GP average age at investment	Time elapsed between GP founding date and its fund's investment date.
GPs per club deal	Numer of GPs involved in a particular club deal (at least 2).

Fund information

Fund location	Location in which fund is registered.
Fund type	Funds are grouped into 'buyout' (BO), 'venture capital' (VC), and 'other'. Often deals are labelled as 'BO&VC'. We considered these deals as buyout deals.
Fund status	Funds in our data sample are either 'closed' or 'closed&liquidated'. Few funds are also open-end 'evergreen' funds.
Fund lifecycle	Time elapsed between fund vintage year and fund investment year.
Fund value	Fund value in USD as of July 2013.
Net IRR	Fund's as of July 2013. We only included funds' net IRR prior to 2009 as younger funds are considered still in the investment phase.

Advisor information

Financial advisor	Advisor that advised one of the parties on the deal's financial matters.
Acquisition advisors	Financial advisor that advised the deal's acquiring party.
Sales advisors	Financial advisor that advised the deal's selling party.

Target advisors	Financial advisor that advised the deal's target.
Acquirer-advisor relationships	
R1: Relationships with buy-side financial advisors (5 years before and after a deal)	Number of times an acquirer was advised by a specific financial advisor when acquiring a company within the previous 5 and future 5 years.
R2: Relationships with buy-side financial advisors (5 years before and after a deal) that are on the target-side in t=0	Number of times an acquirer was advised by a specific financial advisor when acquiring a company within the previ-ous 5 and future 5 years of a deal. At the deal itself, this advisor advised the target.
R3: Relationships target financial advisors (5 years before and after a deal)	Number of times an acquirer bought a company that was advised by the same specific financial advisor within the previous 5 and future 5 years.

Appendix 2: GP & fund information

Appendix 2A comprises descriptive statistics of the 2,482 GPs in our data sample, which were active in 6,329 deals (incl. club deals). Information was consolidated from 4 different databases: Thomson One, Preqin, Capital IQ, and Factset. Average age at investment is the time elapsed between GP founding date and investment date. GPs per club deal describes how many GPs were usually involved in each club deal. Appendix 2B comprises descriptive statistics of the 1,289 funds in our data sample, which were active in 2,369 deals. Information was consolidated from 3 different databases (Thomson One, Preqin, and Factset). Buyout funds are funds that were flagged as 'Buyouts' or 'Buyouts&VCs'. Fund lifecycle is the time elapsed between fund vintage and fund investment date. Fund status, fund value, and net IRR are all Preqin data. Net IRR information only includes deals from 1985-2008 in order to exclude funds that are still in the investment phase. Statistics in Table 3 are not exhaustive - our data samples include further information on GPs, funds. See Appendix-Table 1 for variable definitions.

Appendix 2A: GP INFORMATION	GPs	Deal linkage	Mean	Median	Std. Dev.	5th percentile	95th percentile
GPs (TOTAL)	2,482	6,329					
GPs BY LOCATION							
North America	1,308	3,754					
Western Europe	696	1,762					
RoW	478	813					
GP AVERAGE AGE AT INVESTMENT	1,805	3,015	17.9	15.0	15.0	3.0	44.0
GPs PER CLUB DEAL	3,045	1,078	2.8	2.0	1.5	2.0	6.0

Appendix 2B: FUND INFORMATION	Funds	Deal linkage	Mean	Median	Std. Dev.	5th percentile	95th percentile
FUNDS	1,289	2,369					
FUND BY LOCATION							
North America	730	1,386					
Western Europe	363	729					
RoW	196	254					
FUND TYPE							
Buyout	824	1,580					
VC	135	177					
Other	129	170					
FUND STATUS							
Closed	647	1,328					
Closed & liquidated	48	75					
Evergreen	2	5					
FUND LIFECYCLE	1,231	2,541	2.5	2.0	2.7	-	7.0
FUND VALUE (USD mn)	677	1,378	1,823	772.0	2,788	101	7,259
NET IRR (%)	432	1,087	14.0	11.6	13.9	(2.8)	38.6

Appendix 3: Impact of GP & fund characteristics on EV/EBITDA multiple

Appendix 3 presents the results of pooled ordinary least squares (OLS) regressions on the log of EV/EBITDA multiples for the investment period 1985 to 2013. Appendix 3 considers GP and fund characteristics as independent variables. We control for our key deal characteristics in all regressions - winsorized at the 1%-level. Numbers in the upper rows represent the regression coefficients, numbers in brackets in the lower row represent respective standard errors. We take fixed effects for industry, investment region, and investment year into account. *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. See Appendix - Table 1 for variable definitions.

	Dependent variable: log(EV/EBITDA multiple)	
Independent variables	**PE Entry (1)**	**PE Entry (2)**
GP characteristics		
GP has office in target country	0.016	
	(0.136)	
GP has HQ in target country	-0.050	
	(0.134)	
GP age at investment	0.001	
	(0.002)	
GP type: Classic PE	0.075*	
	(0.044)	
Fund characteristics		
Buyout		0.126
		(0.175)
VC		-0.424*
		(0.220)
Fund lifecycle (fund open date vs. M&A effective date)		-0.001
		(0.011)
log(Fund value)		-0.037
		(0.039)
Number of fund focus industries		0.006
		(0.011)
Number of fund focus locations		0.011
		(0.011)
Investment multiple (x)		-0.760
		(0.913)
RVPI		0.008
		(0.009)
Distr. DPI		0.007
		(0.009)
Net IRR		0.006
		(0.007)
Deal characteristics controls	Yes	Yes
Fixed effects	Yes	Yes
Constant	2.729***	3.657***
	(0.199)	(0.501)
Observations	1,149	479
R-squared	0.286	0.333
Robust standard errors in parentheses		
**** p<0.01, ** p<0.05, * p<0.1*		

Appendix 4: Top 10 GPs & advisors

Appendix 4A lists the top 10 GPs by deal activity. For example, there are 86 entry deals in our data sample in which the Carlyle Group was involved. We believe this covers 14% of all deals (assuming that 'Preqin - Fund Manager Profiles Database' covers the total deal list) that the Carlyle Group was involved between 01/1985 and 07/2013. In Appendix 4B, we added advisor relationship information to each of the top 10 GPs. We first list the number of financial acquisition advisor relationships that we have for each GP in our advisor database, followed by the strongest relationship by deal activity. The number of deals is shown in brackets. We also show this information for financial target advisor relationships. Appendix 4C lists the 10 financial advisors that have most actively worked as acquisition advisors for all the acquirers in our database (PE and strategic).

Appendix 4A - Top 10 GPs in deal list

	GENERAL PARTNER	HEAD-QUARTER	DEAL ACTIVITY	DEAL ACTIVITY / TOTAL GP DEAL ACTIVITY
1	**Carlyle Group**	United States	86	14%
2	**Kohlberg Kravis Roberts**	United States	73	18%
3	**Warburg Pincus**	United States	72	20%
4	**TPG**	United States	69	18%
5	**Apax Partners**	United Kingdom	53	18%
6	**CVC Capital Partners**	United Kingdom	52	14%
7	**3i**	United Kingdom	49	13%
8	**Goldman Sachs Capital**	United States	46	22%
9	**Blackstone Group**	United States	46	11%
10	**Bain Capital**	United States	46	14%

Appendix 4: Top 10 GPs & advisors (continued)

Appendix 4B - Advisor relationships of top 10 GPs

			FINANCIAL ADVISOR RELATIOSHIPS			
	GENERAL PARTNER	**HEAD-QUARTER**	**ACQUIRER ADVISOR RELATIONSHIPS**	**STRONGEST OWN ADVISOR RELATIONSHIP (#)**	**TARGET ADIVSER RELATIONSHIPS**	**STRONGEST TARGET ADVISOR RELATIONSHIP (#)**
1	**Carlyle Group**	United States	116	Credit Suisse (11)	76	JP Morgan Chase (6)
2	**Kohlberg Kravis Roberts**	United States	110	Credit Suisse (15)	64	Goldman Sachs (5)
3	**Warburg Pincus**	United States	46	Credit Suisse (5)	34	Morgan Stanley (4)
4	**TPG**	United States	66	Pitt Capital Partners (7)	37	Citigroup (6)
5	**Apax Partners**	United Kingdom	80	Merrill Lynch (8)	38	JP Morgan Chase (4)
6	**CVC Capital Partners**	United Kingdom	98	Deutsche Bank (9)	32	Goldman Sachs Capital (6)
7	**3i**	United Kingdom	121	PWC (15)	63	KPMG (8)
8	**Goldman Sachs Capital**	United States	23	Goldman Sachs (19)	31	JP Morgan Chase (3)
9	**Blackstone Group**	United States	136	Deutsche Bank (18)	66	Goldman Sachs Capital (7)
10	**Bain Capital**	United States	51	Morgan Stanley (5)	32	Goldman Sachs Capital (5)

Appendix 4: Top 10 GPs & advisors (continued)

Appendix 4C - Top 10 advisors in deal list		
	FINANCIAL ADVISOR	**HEAD-QUARTER**
1	**Goldman Sachs**	United States
2	**Morgan Stanley**	United States
3	**Credit Suisse**	Switzerland
4	**JP Morgan Chase**	United States
5	**Merrill Lynch**	United States
6	**Lazard**	United States
7	**KPMG**	Netherlands
8	**UBS**	Switzerland
9	**Citigroup**	United States
10	**Deutsche Bank**	Germany

Appendix 5: Impact of target characteristics on EV/EBITDA multiples

Appendix 5 presents the results of pooled ordinary least squares (OLS) regressions on the log of EV/EBITDA multiples for the investment period 1985 to 2013. Independent variables are the four target characteristics enterprise value, return on assets, and leverage. Regression 1 includes all PE and strategic deals in our sample. Regressions (2) to (4) include subsamples of our PE and strategic deals. Regression (2) includes all deals below the independent variable's average. Regression 3 includes all deals above this average. Regression (4) includes all deals within the 25th and the 75th percentile. We take fixed effects for industry, investment region, and investment year into account. Numbers in the upper rows represent the regression coefficients; numbers in brackets in the lower row represent respective standard errors. *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. See Appendix-Table 1 for variable definitions.

	Dependent variable: log(EV/EBITDA multiple)			
	All	**< Ø**	**> Ø**	**p25-p75**
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**
log(Enterprise value)	**0.098*** **	**0.132*** **	**0.042** **	**0.104*** **
	(0.004)	**(0.006)**	**(0.017)**	**(0.012)**
Fixed effects	Yes	Yes	Yes	Yes
Constant	1.028***	0.818***	1.624***	0.944***
	(0.100)	(0.113)	(0.240)	(0.152)
Observations	20,642	16,770	3,872	10,322
R-squared	0.092	0.096	0.088	0.090
ROA	**-0.020*** **	**-0.017*** **	**-0.010*** **	**-0.045*** **
	(0.001)	**(0.002)**	**(0.001)**	**(0.004)**
Fixed effects	Yes	Yes	Yes	Yes
Constant	1.728***	1.777***	1.582***	1.727***
	(0.100)	(0.211)	(0.108)	(0.152)
Observations	19,730	10,225	9,505	9,868
R-squared	0.102	0.084	0.092	0.102
Leverage	**-0.007*** **	**-0.015*** **	**-0.008*** **	**-0.008*** **
	(0.000)	**(0.001)**	**(0.000)**	**(0.001)**
Fixed effects	Yes	Yes	Yes	Yes
Constant	1.618***	1.642***	1.692***	1.678***
	(0.097)	(0.104)	(0.194)	(0.115)
Observations	17,375	10,576	6,799	8,687
R-squared	0.101	0.102	0.082	0.067
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Appendix 6: Robustness tests of regression results on EV/EBITDA multiples

Appendix 6 presents the results of regressions on the log of EV/EBITDA multiples. The Table is closely related to Table 4 in the main part of this paper. It shows the effect of the dummy variable private equity (yes/no) on the EV/EBITDA multiple - with various modifications on the data sample. The purpose is to proof the robustness of the initial results. All regressions except (5) are for the investment period 1985-2013. (1) Listed targets only: only targets that were publicly listed at the time of investment are taken into account. (2) Private targets only: only targets that were not publicly listed at the time of investment are taken into account. (3) Club deals only: only deals in which more than one PE firm was involved. (4) Buyout only: only targets that were acquired by buyouts are taken into account. (5) Friendly takeovers only: only deals that were friendly takeovers. (6) Majority takeovers only: only deals in which more than 50% of the target were taken over by the acquirer. (7) Developed markets only: only targets that were located in a developed market at the time of investment are taken into account. (8) Investment period 2005-2013 only: only targets that were acquired between 2005 and 2013 were taken into account. We control for our key deal characteristics in all regressions, unless they fulfil the role of independent variables (winsorized at the 1% significance level). We take fixed effects for industry, investment region, and investment year into account. Numbers in the upper rows represent the regression coefficients; numbers in brackets in the lower row represent respective standard errors. *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. See Appendix-Table 1 for variable definitions. *(See next page for rest of Table.)*

	Dependent variable: log(EV/EBITDA multiple)											
	1) LISTED TARGETS ONLY				**2) PRIVATE TARGETS ONLY**				**3) CLUB DEALS ONLY**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Independent variables	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**
PE ENTRY deals	**-0.243*** **	**-0.188*** **			**-0.198*** **	**-0.103**			**-0.308*** **	**-0.292*** **		
	(0.021)	**(0.020)**			**(0.057)**	**(0.075)**			**(0.039)**	**(0.041)**		
PE EXIT deals			**0.037**	**0.023**			**0.095** **	**-0.019**			**0.184*** **	**0.100*** **
			(0.027)	**(0.026)**			**(0.043)**	**(0.051)**			**(0.034)**	**(0.035)**
Deal characteristics controls		Yes		Yes		Yes		Yes		Yes		Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.560***	1.760***	1.533***	1.688***	1.364***	1.134***	1.312***	1.199***	1.540***	1.883***	1.532***	1.852***
	(0.105)	(0.100)	(0.113)	(0.106)	(0.378)	(0.296)	(0.418)	(0.302)	(0.114)	(0.108)	(0.115)	(0.108)
Observations	15,310	13,385	14,713	12,890	3,021	2,048	3,494	2,410	16,607	13,928	16,953	14,236
R-squared	0.063	0.211	0.068	0.214	0.060	0.273	0.066	0.295	0.053	0.211	0.058	0.219
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1												

Appendix 6: Robustness tests of regression results on EV/EBITDA multiples (continued)

	Dependent variable: log(EV/EBITDA multiple)											
	4) BUYOUT ONLY				5) FRIENDLY TAKEOVERS ONLY				6) MAJORITY TAKEOVERS ONLY			
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Independent variables	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**
PE ENTRY deals	**-0.241*** **	**-0.195*** **			**-0.238*** **	**-0.178*** **			**-0.231*** **	**-0.196*** **		
	(0.020)	**(0.020)**			**(0.021)**	**(0.021)**			**(0.021)**	**(0.022)**		
PE EXIT deals			**0.037***	**0.008**			**0.032**	**0.021**			**0.047** **	**0.024**
			(0.021)	**(0.022)**			**(0.022)**	**(0.023)**			**(0.023)**	**(0.025)**
Deal characteristics controls		Yes		Yes		Yes		Yes		Yes		Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.558***	1.901***	1.515***	1.837***	1.589***	1.909***	1.536***	1.817***	1.575***	1.902***	1.487***	1.809***
	(0.105)	(0.102)	(0.111)	(0.105)	(0.113)	(0.107)	(0.122)	(0.113)	(0.117)	(0.111)	(0.123)	(0.114)
Observations	18,456	15,324	18,270	15,279	15,827	13,077	15,588	12,993	16,030	13,216	15,895	13,224
R-squared	0.055	0.214	0.060	0.222	0.055	0.208	0.063	0.219	0.056	0.215	0.064	0.227
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1												

Appendix 6: Robustness tests of regression results on EV/EBITDA multiples (continued)

	Dependent variable: log(EV/EBITDA multiple)							
	7) DEVELOPED MARKETS ONLY				8) INVESTMENT PERIOD 2005-2013 ONLY			
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
Independent variables	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**
PE ENTRY deals	**-0.261*** **	**-0.216*** **			**-0.178*** **	**-0.148*** **		
	(0.022)	**(0.022)**			**(0.025)**	**(0.027)**		
PE EXIT deals			**0.039***	**0.032**			**0.001**	**-0.010**
			(0.023)	**(0.024)**			**(0.026)**	**(0.029)**
Deal characteristics controls		Yes		Yes		Yes		Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.989***	2.203***	1.988***	2.185***	2.331***	2.596***	2.247***	2.489***
	(0.080)	(0.089)	(0.081)	(0.089)	(0.113)	(0.116)	(0.137)	(0.128)
Observations	14,989	12,332	14,902	12,354	7,908	6,162	7,851	6,227
R-squared	0.068	0.197	0.075	0.210	0.046	0.194	0.054	0.204
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								

Appendix 7: Impact of strong financial advisor relationships (past relationships only)

Appendix 7 displays the impact of our acquirer-advisor relationships on multiple deltas. It is closely related to Table 4. However, we only take into account the relationships of the five years before the deal (and not the future relationships). Multiple deltas are the difference between EV/EBITDA multiples of private equity deals and EV/EBITDA multiples of their respective benchmark multiples divided by the EV/EBITDA multiples of the respective benchmark multiples. Generally, the more negative the multiple delta, the higher the private equity discount. Panel A focuses on our PE deals sample, while Panel B focuses on our strategic deals sample. Independent variables in both Panels are the three types of advisor relationships we are investigating on. R1: the number of times a GP was advised by a specific financial advisor when acquiring a company five years before and after a deal. R2: the number of times a GP was advised by a specific financial advisor when acquiring a company five years before and after a deal. This advisor advised the target at t=0. R3: the number of times a GP acquired a company that was advised by the same specific financial advisor five years before and after a deal. We also control (but do not show in detail) for our key deal characteristics (winsorized at the 1% significance level). We take fixed effects for industry, investment region, and investment year into account. Numbers in the upper rows represent the regression coefficients; numbers in brackets in the lower row represent respective standard errors. *, ** and *** indicate p-values of 10%, 5%, and 1% significance level, respectively. See Appendix-Table 1 for variable definitions.

Appendix 7 Panel A: Relationships between PE firms and financial advisors									
	Dependent variable: Multiple deltas								
Independent variables	**PE Entry (1)**	**PE Entry (2)**	**PE Entry (3)**	**PE Entry (4)**	**PE Entry (5)**	**PE Entry (6)**	**PE Entry (7)**	**PE Entry (8)**	**PE Entry (9)**
R1: Relationships with buy-side financial advisors (5 years before and after a deal)	**0.036**	**0.038**	**0.045**						
	(0.041)	**(0.042)**	**(0.041)**						
R2: Relationships with buy-side financial advisors (5 years before and after a deal) that are on the target-side in t=0				**-0.093****	**-0.118*****	**-0.079***			
				(0.043)	**(0.045)**	**(0.041)**			
R3: Relationships target financial advisors (5 years before and after a deal)							**-0.103***	**-0.140****	**-0.084**
							(0.057)	**(0.061)**	**(0.055)**
Acquirer deal activity		-0.001			0.005			0.005	
		(0.001)			(0.003)			(0.003)	
Advisor deal activity			-0.002***			-0.001			-0.001
			(0.001)			(0.001)			(0.001)
Deal characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.114	0.048	-0.122	-0.665**	-0.466	-0.700**	-0.608**	-0.385	-0.653**
	(0.418)	(0.426)	(0.391)	(0.282)	(0.299)	(0.278)	(0.277)	(0.307)	(0.276)
Observations	631	631	631	274	274	274	274	274	274
R-squared	0.187	0.188	0.198	0.296	0.304	0.302	0.295	0.303	0.301
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1									

Appendix 7: Impact of strong financial advisor relationships (past relationships only) (continued)

Appendix 7 Panel B: Relationships between strategic acquirers and financial advisors									
	Dependent variable: Multiple deltas								
Independent variables	**PE Entry (1)**	**PE Entry (2)**	**PE Entry (3)**	**PE Entry (4)**	**PE Entry (5)**	**PE Entry (6)**	**PE Entry (7)**	**PE Entry (8)**	**PE Entry (9)**
R1: Relationships with buy-side financial advisors (5 years before and after a deal)	**-0.024**	**-0.031**	**-0.021**						
	(0.026)	**(0.028)**	**(0.026)**						
R2: Relationships with buy-side financial advisors (5 years before and after a deal) that are on the target-side in t=0				**0.132**	**0.092**	**0.159**			
				(0.152)	**(0.158)**	**(0.155)**			
R3: Relationships target financial advisors (5 years before and after a deal)							**0.069**	**0.021**	**0.095**
							(0.120)	**(0.121)**	**(0.122)**
Acquirer deal activity		0.002			0.014			0.014	
		(0.005)			(0.009)			(0.009)	
Advisor deal activity			-0.000			-0.001**			-0.001**
			(0.000)			(0.000)			(0.000)
Deal characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.911***	0.919***	0.877***	1.123***	1.157***	1.001***	1.128***	1.157***	1.010***
	(0.290)	(0.289)	(0.291)	(0.352)	(0.352)	(0.352)	(0.354)	(0.355)	(0.354)
Observations	7,356	7,356	7,356	7,174	7,174	7,174	7,174	7,174	7,174
R-squared	0.076	0.076	0.076	0.071	0.072	0.072	0.071	0.072	0.072
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1									