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Top-tier Investment Banks and Bidders' Announcement Returns

Evidence from European Public-to-public Mergers and Acquisitions

Abstract

This study provides new evidence on the role of investment banks in European mergers and acquisitions. Consistent with Golubov, Petmezas and Travlos (2012), bidders that use top-tier investment banking services experience higher returns around acquisition announcements, *ceteris paribus*, in the total sample of 485 European public-to-public deals. However, separating the impact of top-tier advisory with respect to the method of payment shows that the observed positive effect does not emerge in all-cash offers. The finding is robust to three different definitions of top-tier advisor.

Keywords:

Merger, Acquisition, Investment Bank, Financial Advisor, Method of Payment

Finance
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1 Introduction

In the market for corporate control, companies execute mergers and acquisitions[1] (M&A) mainly with the objective to create operational synergies and strategic advantages. When planning for a significant acquisition, the acquirer[2] typically assigns one or several investment banks as its financial advisors to get assistance in valuing the target company, structuring the transaction and negotiating better terms. Investment banks are frequently ranked in so called league tables according to their regional deal volumes. Interestingly, certain banks appear high in these rankings from year to another and consequently, strengthen their reputation as the leading M&A advisors. In the market of intangible financial advisory services, being able to continuously maintain high deal volumes could signal experience and quality, but do the top-ranking investment banks actually provide better deal outcomes for the acquiring companies?

After two decades of mixed evidence on the relation between financial advisor reputation and acquisition announcement returns to bidder shareholders[3] (Bowers and Miller, 1990; McLaughlin, 1992; Servaes and Zenner, 1996; Hunter and Jagtiani, 2003; Ismail, 2010), Golubov, Petmezas and Travlos (2012) document that bidders that employ a top-tier financial advisor experience higher announcement returns in a sample of U.S. public-to-public acquisitions. The positive effect stems from top-tier bankers' ability to structure more synergistic deals and to capture a larger share of the synergies to the bidder.

However, the role of top-tier financial advisors has received only a limited amount of attention in Europe, and to the best of my knowledge, only one prior study on the subject exists. Kovanen (2008) posits that the reputation of bidder's investment bank affects negatively, or is at best statistically insignificant in explaining the bidder's announcement returns. Nevertheless, her sample consists solely of cross-border deals

[1] I use the definitions *merger*, *acquisition*, *deal*, *transaction* and *takeover* interchangeably.
[2] The definitions *acquirer, acquiring company*, *bidder* and *bidding company* refer interchangeably to companies listed as acquirer in SDC Mergers and acquisitions database.
[3] I define the returns to bidder shareholders around the official acquisition announcement date as *bidder's announcement returns*.

and leaves room for a European study with more heterogeneous transaction characteristics.

The primary objective of this thesis is to test in the spirit of Golubov et al. (2012), whether the market of European public-to-public acquisitions shows a positive relation between advisor reputation and bidder's announcement returns. In other words, do announcement returns to bidder shareholders indicate that top-tier investment banks structure and negotiate better deals than their less reputable counterparts? Furthermore, I add to the work of Golubov et al. (2012) by separating the potential impact of top-tier financial advisory with respect to the payment method of the deal.

The rest of the thesis proceeds as follows. In Section 2, I review the relevant literature on the role of financial advisors in M&A and announcement returns to bidder shareholders. Finally, I state the hypotheses. In Section 3, I present the sample selection criteria and data sources. In Section 4, I introduce the methodology and variables of the empirical analyses. In Section 5, I present the empirical results. In Section 6, I discuss the findings. Section 7 concludes.

2 Theoretical Background and Hypotheses

2.1 *Role of Financial Advisors in M&A*

The role of financial advisors in mergers and acquisitions has been studied to a notable extent. Servaes and Zenner (1996) show that bidders resort to investment banking services in complex transactions or if they have little prior acquisition experience. Deal complexity increases with deal size and decreases with the higher proportion of cash in the payment. In addition, financial advisors assist acquirers in identifying better targets as well as structuring and negotiating more valuable deals (Kale, Kini and Ryan, 2003).

The concept of reputation[4] is central in investment banking, since in the market of intangible financial advisory services, quality and skill are hard to observe. Thus,

[4] Reputation leads to a higher market share and, consequently, to high league table rankings. In addition, since I categorize financial advisors as *top-tier* based on league tables, the definitions *reputable*, *top-ranking* and *top-tier* are essentially same in this thesis.

financial advisors have the incentive to perform well repeatedly to gain reputation, attract more clients and, finally, collect more and higher fees for their services in the future (Kale et al., 2003). Therefore, the other way around, financial advisors that are able to maintain reputation for longer periods of time should be able to provide better deal outcomes for their clients. These superior outcomes should be reflected positively in their clients' returns around acquisition announcements.

However, prior studies have produced mixed results on the relation between financial advisor reputation and announcement returns to bidders. Bowers and Miller (1990) find evidence that reputable advisors – whether used by the bidder, the target or both – contribute to the total, but not to the bidder's share of the deal synergies. McLaughlin (1992) and Hunter and Jagtiani (2003) show that bidders with less reputable advisors experience higher announcement returns. However, both Servaes and Zenner (1996) and Ismail (2010) find that the reputation of bidder's investment bank is statistically insignificant in explaining the bidder's announcement returns. Departing from prior studies, Kale et al. (2003) focus on the relative reputations of the financial advisors hired by bidder and target companies. They document that the announcement returns to bidders increase with the relative, but not absolute, reputation of its financial advisor. In the context of European cross-border transactions, Kovanen (2008) shows that bidder's choice of a regionally or locally reputable financial advisor results in a negative or statistically insignificant effect on its acquisition announcement returns.

Golubov, Petmezas and Travlos (2012) provide findings that partly explain the previous ambiguous evidence. When the financial advisors employed by the bidding companies are divided into *top-tier* and *non-top-tier* based on market shares, they document that bidder's choice of a top-tier advisor results in higher acquisition announcement returns, but only in acquisitions of public target companies. They posit that top-tier advisors' ability to structure deals with higher synergies and to capture a larger share of the said synergies to their bidder clients emerges only in public acquisitions due to certain features that require more skills from the advisor[5]. In addition, public target companies receive more attention in the financial media than their private counterparts and

[5] Higher bargaining power and dispersed ownership of public target companies, and regulatory issues.

therefore, performing poorly in public-to-public acquisitions would expose reputable top-tier advisors to a higher risk of reputational loss. The theory is in line with Beatty and Ritter (1986), who show that excessive underpricing by the underwriter results in a loss of market share in initial public offerings.

2.2 *Announcement Returns to Bidder Shareholders in M&A*

According to the majority of prior studies, bidder shareholders experience approximately zero average returns around acquisition announcements. However, several bidder-related characteristics have a proven influence on the announcement returns in individual cases: *Bidder size* (Moeller, Schlingemann and Stulz, 2004), *leverage* (Maloney, McCormick and Mitchell, 1993), *market valuation* (Dong, Hirschleifer, Richardson and Teoh, 2006), *idiosyncratic volatility* (Moeller, Schlingemann and Stulz, 2007) *and stock momentum* (Rosen, 2006). In addition, several deal characteristics play a pivotal role in the announcement returns to bidding companies: *Relative size of bidder and target companies* (Fuller, Netter and Stegemoller, 2002), *method of payment* (Travlos, 1987), *deal hostility* (Servaes, 1991), *deal type* (Jensen and Ruback, 1983) and *diversification across industries* (Morck, Schleifer and Vishny, 1990). I discuss the theories in more detail in Section 4.3.

2.3 *Hypotheses*

Top-tier financial advisors create higher deal synergies and ensure the accrual of the synergies to their bidder clients. However, these advantages are reflected in bidders' announcement returns only in public-to-public acquisitions due to the higher level of required skills and the risk of reputational damage in case of poor advisory (Golubov et al., 2012). Therefore, top-tier advisors should also limit potential opportunistic behavior towards their clients in public acquisitions[6]. As my objective is to test, whether the European market of public-to-public mergers and acquisitions shows a positive relation between top-tier M&A advisory and the announcement returns of the bidding companies, I state the first hypothesis as follows:

[6] Rau (2000) documents that certain advisory fee structures can result in conflicts of interest between the investment bank and its client.

H1: *Bidders with at least one top-tier financial advisor experience higher announcement returns, ceteris paribus, than bidders without any top-tier financial advisors* (the "**higher returns hypothesis**").

My second hypothesis is of an exploratory nature. As stock offers are considered more complex than all-cash offers[7] (Servaes and Zenner, 1996) they require more skills from the financial advisor, especially in terms of valuation, negotiations and, possibly, security issuance. Intuitively, when the set of required skills increases, more skilled advisors perform relatively better. Thus, the positive shareholder wealth effect from using a top-tier financial advisor should be stronger in case of stock offers than in case of all-cash offers:

H2*: The difference in announcement returns between bidders with at least one top-tier financial advisor and bidders without any top-tier financial advisors is larger in stock offers than in all-cash offers* (the "**method of payment hypothesis**").

3 Data

3.1 *M&A Sample*

I start the sample collection by selecting all successful European public-to-public transactions in Security Data Corporation's Mergers and Acquisitions Non-U.S. Targets database ("**SDC**"), announced between January 1994 and December 2013, and recorded in the database on 26 February 2014.

Firstly, I filter all observations including a transaction type or a deal characteristic not controlled in the empirical analyses. Consequently, I exclude observations that SDC characterizes as share repurchases, leveraged buyouts, management buyouts, reverse takeovers, bankruptcy transactions or going private transactions.

Secondly, I require that both the bidder and the target be listed in EU-15 countries, Norway or Switzerland (e.g. Merivirta, 2008).

[7] *All-cash offer* is a deal paid solely with cash. *Stock/equity offer* is a deal paid at least partly with stock.

Thirdly, all observations must represent a significant change of corporate control. I require that the bidder company held less than 30 percent, and more than 50 percent of target company common stock before and after the deal completion, respectively.

Finally, I require the US$ deal value to be at least 1% of the bidder's US$ market capitalization, since transactions with a smaller relative size are likely to have a negligible impact on bidder's announcement returns. In addition, I set the minimum deal value to $30 million due to unreliable advisor data in smaller transactions.

3.2 *Other Data*

I draw all pricing and accounting data from Thomson One Banker database ("**Thomson**") and ensure the matching correctness between SDC and Thomson manually. Missing data items needed for constructing the variables described in Section 4 reduce the sample to some extent, but the final sample consists of 485 observations. Yearly and regional distributions of the sample are presented in Appendix A.

4 Methodology

I study the relation of advisor reputation and bidders' announcement returns using standard cross-sectional OLS regressions. In this section, I first construct binary advisor ranking variables to flag reputable advisors. Secondly, I calculate the announcement returns to bidders using the market model. Thirdly, I present a set of control variables in light of previous theories. Finally, I specify the cross-sectional OLS regression formulae and present the dummy variable interactions to separate the effect of advisor reputation with respect to the payment method of the deal. Table 2 reports all variable-specific descriptive statistics.

4.1 *Advisor Rankings*

In recent academic literature, the most common way of capturing the relation of advisor reputation and announcement returns is to construct a dummy variable or several dummy variables by applying information included in league tables. Golubov et al. (2012) use a two-tiered categorization based on advisor-specific market shares. Another

common solution (e.g. Rau, 2000; Hunter and Jagtiani, 2003; Kovanen, 2008) is a three-tiered structure. I follow the method of Golubov et al. (2012) and divide the financial advisors into categories of *top-tier* and *non-top-tier*, based on the advisor-specific total values of all European transactions recorded in SDC and announced between January 1994 and December 2013. Table 1 reports the rankings.

Another question is how many advisors should be included into the highest tier. Since the findings of Golubov et al. (2012) are robust to definitions of five, eight and ten top-ranking investment banks, I use all three definitions in OLS regressions. In addition, I use the definition of five highest ranking advisors to divide the total sample of 485 deals into subsamples of 113 top-tier-advised and 372 other deals to examine the differences in bidder and deal characteristics in Table 2.

The top-tier dummies *TT5*, *TT8* and *TT10* receive the value of one, if at least one of the financial advisors used by the bidder has a rank equal to, or below 5, 8 or 10, respectively, according to Table 1. The proportions of *TT5*, *TT8* and *TT10* in the final sample are 23.3%, 34.6% and 41.9%, respectively.

TABLE 1: League Table Rankings

This table presents the 15 highest ranking investment banks based on the value of all European transactions, in which the bank acted as a financial advisor between 1/1994 and 12/2013, according to SDC Mergers and Acquisitions non-U.S. Targets database. *Value* is the total value of transactions in $US billion. *Number* is the number of transactions.

Rank	Advisor Name	Value	Number
1	Goldman Sachs	4153	1553
2	Morgan Stanley	3890	1767
3	JP Morgan	3494	2022
4	UBS	2960	2059
5	Bank of America Merrill Lynch (incl. Merrill Lynch)	2900	1189
6	Citi (incl. Solomon Smith Barney)	2837	1653
7	Deutsche Bank	2741	2115
8	Rothschild	2569	2846
9	Credit Suisse	2457	1678
10	Lazard	2205	2105
11	BNP Paribas SA	1726	1724
12	Nomura	1479	855
13	Commerzbank AG	956	933
14	RBS	951	1374
15	HSBC Holdings PLC	774	990

4.2 *Announcement Returns*

I calculate the market-adjusted announcement returns for bidders using the market model as in MacKinlay (1997). To begin with, I apply cross-sectional OLS regressions to estimate the market model parameters α_i and β_i for each bidder *i* over the window of [-240, -41] trading days relative to the acquisition announcement:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

R_{it} and R_{mt} are the daily returns on the primarily traded common stock of bidder *i* on its trading day *t*, and the daily returns on the market benchmark on *t*, respectively. All daily return observations are logarithmic and account for dividends, interest and stock splits. As for the market benchmark, I follow Merivirta (2008) and use FTSE All-Share Total Return Index[8]. Then, I calculate the daily abnormal returns for each bidder *i* using the estimated parameters:

$$AR_{it} = R_{it} - \widehat{\alpha}_i - \widehat{\beta}_i R_{mt} \quad (2)$$

$\widehat{\alpha}_i$, and $\widehat{\beta}_i$ are the estimated intercept parameter and the estimated slope parameter for bidder *i*, respectively. Finally, I choose the event window of [-1, 1] trading days relative to the acquisition announcement to calculate the cumulative abnormal announcement returns to each bidder *i*:

$$CAR_i[-1, 1] = \sum_{t=-1}^{1} AR_{it} \quad (3)$$

Consistent with prior research, the mean *CAR [-1, 1]* is 0.00% for the total sample of 485 bidders. The mean difference between the subsamples of top-tier-advised and other deals is statistically insignificant at the conventional levels (*p*-value 0.134).

[8] Merivirta (2008) uses FTSE All-Share Total Return Index as the market benchmark in a study of M&A announcement returns in EU15 countries, Norway and Switzerland.

4.3 *Control Variables*

This subsection presents the relevant bidder and deal characteristic controls for OLS regressions. The expected sign of each variable is shown next to the variable name in parentheses.

Bidder Characteristics:

Size (-): Moeller, Schlingemann and Stulz (2004) document that larger bidders experience lower announcement returns. They hypothesize that the effect results from lower synergy gains and higher bid premiums in acquisitions by large companies. The variable *size* is bidder's market capitalization 30 trading days prior to the acquisition announcement. The mean (median) *size* of all bidders is $US 6.332 billion ($US 1.173 billion). However, the mean difference of *size* (US$ -10.505 billion) between the subsamples is highly statistically significant (*p*-value < 0.001), indicating that the choice of a top-tier advisor may be related positively to the bidder's size.

Leverage (+): Maloney, McCormick and Mitchell (1993) present an application of debt-monitoring hypothesis to mergers and acquisitions. They show that bidders with higher leverage experience higher announcement returns, since interest payment obligations cut the financial slack of a company and prevent its management from executing value-destroying acquisitions. The variable *leverage* is the ratio of bidder's total debt to total assets, as reported at the financial period end preceding the acquisition announcement. The mean (median) *leverage* of all acquirers is 21.2% (20.5%). The mean divides into 23.2% for top-tier-advised and 20.2% for other deals and the difference between the subsamples is weakly statistically significant (*p*-value 0.090).

B/M (+): Dong, Hirschleifer, Richardson and Teoh (2006) find evidence that bidders with higher market valuations tend to earn lower announcement returns. However, target company market valuations are insignificant in explaining returns to bidders. I control for bidder's market valuation with the variable *B/M* that is the book-to-market ratio of the bidder's primarily traded common stock, calculated 30 trading days prior to

TABLE 2: Descriptive Statistics

This table presents the descriptive statistics for a sample of 485 European public-to-public acquisitions announced between 1/1994 and 12/2013. *CAR [-1, 1]* are the cumulative abnormal returns (market model, FTSE All-Share Index) on bidder's common stock, over the window of [-1, 1] trading days relative to the acquisition announcement. *TT5*, *TT8* and *TT10* are one, if the bidder used at least one financial advisor that ranks among five, eight and ten highest, respectively, when financial advisors are ranked based on the total advisor-specific value of all European transactions announced between 1/1994 and 12/2013 and recorded in SDC Mergers and Acquisitions non-U.S. targets database, and otherwise zero. *Size* is bidder's market capitalization in $US billion. *Leverage* is the ratio of bidder's total debt and total assets. *B/M* is the book-to-market ratio for bidder's common stock. *Volatility* is the standard deviation of bidder's abnormal returns over the window of [-205, -6] trading days relative to the acquisition announcement. *BHAR* are the market-adjusted (FTSE All-Share Index) returns on bidder's common stock over the window of [-205, -6] trading days relative to the acquisition announcement. *Relative* is the ratio of the deal value and bidder's market capitalization. *Cash*, *Hostile*, *Tender*, *Diversify*, *Cross-Border* and *Rumor* are one, if the deal is an all-cash offer, categorized in SDC as hostile, categorized in SDC as a tender offer, is a cross-border transaction, occurs between target and bidder that do not share any common 2-number SIC industry definitions, and first became public as a rumor according to SDC, respectively, and otherwise zero. The sample of all observations is divided into subsamples based on *TT5*. *p-values* are based on difference of means *t*-tests between the subsamples. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

	(1) All				(2) Non-top-tier TT5 = 0				(3) Top-tier TT5 = 1				Difference of Means	
	N	**Mean**	**Median**	**St. Dev.**	**N**	**Mean**	**Median**	**St. Dev.**	**N**	**Mean**	**Median**	**St. Dev.**	**Mean (2) - Mean (3)**	***p*-value**
Announcement Returns:														
CAR [-1, 1]	485	0.000	-0.002	0.075	372	-0.003	-0.004	0.075	113	0.010	0.011	0.077	-0.012	0.134
Top-tier Definition:														
TT5	485	0.233	-	0.423	372	-	-	-	113	-	-	-	-	-
TT8	485	0.346	-	0.476	372	-	-	-	113	-	-	-	-	-
TT10	485	0.419	-	0.494	372	-	-	-	113	-	-	-	-	-
Control Variables:														
Size	485	6.332	1.173	16.170	372	3.884	0.802	9.493	113	14.389	4.246	27.313	-10.505***	<0.001
Leverage	485	0.212	0.205	0.146	372	0.206	0.196	0.146	113	0.232	0.221	0.146	-0.027*	0.090
B/M	485	0.483	0.386	0.435	372	0.487	0.394	0.450	113	0.471	0.364	0.384	0.016	0.717
Volatility	485	0.020	0.018	0.011	372	0.020	0.018	0.010	113	0.020	0.018	0.013	0.000	0.837
BHAR	485	1.150	1.050	0.596	372	1.159	1.058	0.615	113	1.119	1.033	0.527	0.040	0.500
Relative	485	0.457	0.301	0.527	372	0.466	0.283	0.570	113	0.431	0.370	0.350	0.035	0.432
Cash	485	0.398	-	0.490	372	0.406	-	0.492	113	0.372	-	0.485	0.034	0.514
Hostile	485	0.039	-	0.194	372	0.048	-	0.215	113	0.009	-	0.094	0.040***	0.006
Tender	485	0.744	-	0.437	372	0.772	-	0.420	113	0.655	-	0.478	0.117**	0.021
Diversify	485	0.177	-	0.382	372	0.164	-	0.371	113	0.221	-	0.417	-0.057	0.192
Cross-border	485	0.340	-	0.474	372	0.298	-	0.458	113	0.478	-	0.502	-0.179***	<0.001
Rumor	485	0.138	-	0.345	372	0.124	-	0.330	113	0.186	-	0.391	-0.062	0.127

the acquisition announcement. The average (median) *B/M* is 48.3% (38.6%) for the whole sample. Mean *B/M* does not differ significantly between top-tier-advised and other deals.

Volatility (-): Moeller, Schlingemann and Stulz (2007) study the effects of information asymmetry on bidders' announcement returns in equity offers for public target companies. They report, *ceteris paribus*, lower returns for bidders with higher information asymmetry. In accordance with Moeller et al. (2007), I approximate information asymmetry using the standard deviation of bidder's daily abnormal returns over the window of [-205, -6] trading days relative to the acquisition announcement:

$$\overline{AR}_i = \frac{\sum_{t=-205}^{-6} AR_{it}}{n_i} \tag{4A}$$

$$volatility_i = \frac{\sum_{t=-205}^{-6} (AR_{it} - \overline{AR_i})}{(n_i - 1)} \tag{4B}$$

AR_{it} are the daily abnormal returns for each bidder i, calculated as in equation (2). n_i is the number of daily abnormal return observations for each bidder i. The mean (median) *volatility* is 2.00% (1.80%) in the total sample as well in both subsamples.

BHAR (-) and year dummies: Firstly, Rosen (2006) shows that bidders' announcement returns are negatively related to the trailing 12-month buy-and-hold abnormal returns on their common stocks ("*bidder-specific stock momentum*"). I calculate these returns over the window of [-205, -6] trading days relative to the acquisition announcement:

$$BHAR_i = \frac{\prod_{t=-205}^{-6} (1 + R_{it})}{\prod_{t=-205}^{-6} (1 + R_{mt})} \tag{5}$$

R_{it} and R_{mt} are defined as in equation (1). In the sample of all deals, mean (median) *BHAR* is 1.150 (1.050). The equivalent averages are 1.119 in the sample of top-tier-advised deals and 1.159 in the sample of other deals.

Furthermore, Rosen (2006) finds that bidders' announcement returns are affected positively by the trailing 12-month average of the announcement returns on other

bidders in the sample ("*merger momentum*"), the trailing 12-month returns on the market index ("*market momentum*") and the announcement returns of each bidder's previous acquisition announcement ("*bidder-specific merger momentum*"). However, I exclude the controls for bidder-specific merger momentum, since the proportion of repeat bidders in my sample is extremely low. In addition, to simplify the regression models, I decide to approximate the impacts of merger momentum and market momentum by adding year dummies to the regressions, since merger and market momentum are equal for all acquirers in the same point of time.

Deal characteristics:

Relative (-): I follow Fuller, Netter and Stegemoller (2002) in defining a variable to control for the potential negative effect from higher relative size of the deal. *Relative* is the ratio of the $US deal value and the bidder's $US market capitalization 30 trading days prior to the acquisition announcement. The mean (median) *relative* is 45.7% (30.1%) in the total sample, implying that bidders acquire companies approximately half their size, on average. The mean *relative* is slightly lower in the subsample of top-tier-advised deals (43.1%) than in the subsample of other deals (46.6%).

Cash (+): According to Travlos (1987), bidders that pay a larger portion of the deal with stock experience lower announcement returns than those, who pay with cash. Namely, paying with cash can signal to bidder shareholders that bidder's management considers its stock to be undervalued. I control for the potential effects of the method of payment using the dummy variable *cash* that is one, if the deal is an all-cash offer, and otherwise zero. 39.8% of the deals in the total sample are all-cash offers. In the subsamples of top-tier-advised (other) deals the equivalent proportions are 37.2% (40.6%).

Hostile (-): Servaes (1991) shows that deal hostility is negatively related to bidder's announcement returns. Target company managers' negative attitude towards the deal can lead to higher payment premiums and activation of takeover defenses, both of which are costly to the bidder. The dummy variable *hostile* is one, if the deal is characterized as hostile in SDC, and otherwise zero. Hostile deals represent only 3.9%

of all deals. Subsample difference of *hostile* is statistically significant, as only one top-tier-advised deal is hostile (*p*-value 0.006).

Tender (+): Jensen and Ruback (1983) find that bidders earn higher announcement returns in tender offers, when compared to other deal types. The dummy variable *tender* characterizes a deal as a tender offer. Tender offers represent 74.4% of all, 65.5% of top-tier-advised and 77.2% of other deals. The mean difference between subsamples is fairly statistically significant (*p*-value 0.021).

Diversify (-): Morck, Schleifer and Vishny (1990) document that if bidder and target companies do not operate within the same industry, bidders experience lower announcement returns. The variable *diversify* is one, if bidder and target do not have any common 2-digit SIC industry codes, and otherwise zero. The diversifying deals represent 17.7% of all deals in the sample.

Rumor (+/-): Jarrell and Poulsen (1989) show that takeover rumors relate to situations, in which the information content of an acquisition is reflected partly in target company stock prices already before the official acquisition announcement. I control for the similar rumor-related effect in the case of bidder companies, using the dummy variable *rumor* that is one, if the deal became public as a rumor before the official announcement by any acquisition parties, and otherwise zero. The data on rumors are drawn directly from SDC. Rumored deals represent 13.8% of the final sample.

Cross-border (+/-): Finally, I flag the cross-border deals in the sample to compare my results to those of Kovanen (2008). The dummy variable *cross-border* is one, if SDC characterizes the deal as cross-border. Cross-border deals in represent 34.0% of the total sample. However, the proportion of cross-border deals is remarkably higher in the subsample of top-tier-advised deals (47.8%) compared to other deals (29.8%). The difference is statistically highly significant (*p*-value <0.001), implying that bidders may prefer to choose a top-tier advisor for cross-border deals.

4.4 *OLS Regression Models*

I use cross-sectional OLS regressions with heteroskedasticity-robust standard errors to test for the *higher returns hypothesis* (H1) and the *method of payment hypothesis* (H2). The pairwise correlations between all variables are satisfactorily low as presented in Table 3. In the first basic model, I regress bidders' announcement returns on the top-tier variable *TT5* and the set of all specified control variables:

$$\textbf{Model 1}: CAR_i[-1,1] = \alpha_i + \beta_1 TT5_i + \sum \beta_j control_{ij} + \varepsilon_i \quad (6)$$

To test for the *method of payment hypothesis* (H2), I separate the potential effects of top-tier advisory for all-cash and equity deals by interacting variables *TT5* and *cash*. The second model is as follows:

$$\textbf{Model 2:}\ CAR_i[-1,1] = \alpha_i + \beta_1 TT5_i + \beta_2 cash_i + \beta_3 (TT5_i \times cash_i) + \sum \beta_j control_{ij} + \varepsilon_i \quad (7)$$

Finally, I test the hypotheses (H1) and (H2) with other top-tier definitions:

$$\textbf{Model 3:}\ CAR_i[-1,1] = \alpha_i + \beta_1 TT8_i + \beta_2 cash_i + \beta_3 (TT8_i \times cash_i) + \sum \beta_j control_{ij} + \varepsilon_i \quad (8)$$

$$\textbf{Model 4:}\ CAR_i[-1,1] = \alpha_i + \beta_1 TT10_i + \beta_2 cash_i + \beta_3 (TT10_i \times cash_i) + \sum \beta_j control_{ij} + \varepsilon_i \quad (9)$$

To clarify, none of the interactions are mutually exclusive and therefore, the values of *TT5, TT8, TT10* and *cash* remain unchanged, when I add the interactions. To find the coefficients for *TT5*, *TT8* and *TT10* that describe the effects of top-tier financial advisory given that *cash* = 0 (equity offers) and given that *cash* = 1 (all-cash offers), I rearrange the regression estimates as follows:

$$\widehat{CAR_i}[-1,1] = \alpha_i + \hat{\beta}_1 TT_i + \hat{\beta}_2 cash_i + \hat{\beta}_3 (TT_i \times cash_i) + \sum \hat{\beta}_j control_{ij} \quad (10)$$

$$\widehat{CAR_i}[-1,1] = \alpha_i + (\hat{\beta}_1 + \hat{\beta}_3 cash_i) TT_i + \hat{\beta}_2 cash_i + \sum \hat{\beta}_j control_{ij} \quad (11)$$

TABLE 3: Pairwise Correlations

This table reports the pairwise correlations for all variables used in the empirical analyses. *CAR [-1, 1]* are bidder's cumulative abnormal returns (market model with FTSE All-Share Index) over the window of [-1, 1] trading days relative to the acquisition announcement. *TT5*, *TT8* and *TT10* are one, if the bidder used at least one financial advisor that ranks among five, eight and ten highest, respectively, when financial advisors are ranked based on the total advisor-specific value of all European transactions announced between 1/1994 and 12/2013 and recorded in SDC Mergers and Acquisitions non-U.S. targets database, and otherwise zero. *Size* is bidder's market capitalization in $US billion. *Leverage* is the ratio of bidder's total debt and total assets. *B/M* is the ratio of book and market values of the bidder's common stock. *Volatility* is the standard deviation of bidder's daily abnormal returns in the window of [-205, -6] trading days. *BHAR* is the market-adjusted (FTSE All-Share Index) return on the bidder's common stock in the window of [-205, -6] trading days. *Relative* is the ratio of US$ deal value and bidder's US$ market capitalization. *Cash*, *Hostile*, *Tender*, *Diversify, Cross-Border* and *Rumor* are one, if the deal is an all-cash offer, categorized in SDC as hostile, categorized in SDC as a tender offer, is a cross-border transaction, occurs between target and bidder that do not share any common 2-number SIC codes, and first became public as a rumor according to SDC, respectively, and otherwise zero.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. CAR [-1,1]	1.000															
2. TT5	0.069	1.000														
3. TT8	0.079	0.757	1.000													
4. TT10	0.077	0.650	0.858	1.000												
5. Size	-0.038	0.275	0.277	0.261	1.000											
6. Leverage	-0.011	0.077	0.105	0.079	0.078	1.000										
7. B/M	0.101	-0.015	0.043	0.050	-0.117	-0.046	1.000									
8. Volatility	-0.107	0.010	-0.041	-0.029	-0.118	-0.082	0.139	1.000								
9. BHAR	0.016	-0.028	-0.018	-0.034	-0.023	-0.087	-0.194	0.288	1.000							
10. Relative	-0.007	-0.028	-0.078	-0.103	-0.129	-0.023	0.102	0.210	0.002	1.000						
11. Cash	0.072	-0.030	-0.008	0.002	0.081	0.049	0.044	-0.101	-0.066	-0.236	1.000					
12. Hostile	-0.025	-0.086	-0.058	-0.042	-0.047	-0.043	0.043	-0.108	-0.034	0.064	0.01	1.000				
13.Tender	-0.066	-0.113	-0.090	-0.097	-0.012	-0.127	-0.069	-0.052	0.025	-0.017	0.119	0.021	1.000			
14. Diversify	-0.034	0.063	0.036	0.044	-0.034	0.033	-0.002	-0.033	0.055	0.030	-0.124	-0.038	-0.013	1.000		
15. Cross-Border	0.033	0.160	0.182	0.220	0.163	0.099	0.034	0.028	-0.021	-0.131	0.172	-0.033	-0.108	-0.037	1.000	
16. Rumor	-0.073	0.076	0.048	0.024	0.098	0.015	0.016	-0.003	0.082	0.024	0.029	-0.081	0.084	0.018	-0.061	1.000

Thus, in case of equity offers, when *cash* = 0:

$$\widehat{CAR}_i[-1,1] = \alpha_i + (\hat{\beta}_1 + \hat{\beta}_3 \times 0)TT_i + \hat{\beta}_2 \times 0 + \sum \hat{\beta}_j control_{ij} \quad (12)$$

$$\widehat{CAR}_i[-1,1] = \alpha_i + \hat{\beta}_1 TT_i + \sum \hat{\beta}_j control_{ij} \quad (13)$$

And in case of all-cash offers, when *cash* = 1:

$$\widehat{CAR}_i[-1,1] = \alpha_i + (\hat{\beta}_1 + \hat{\beta}_3 \times 1)TT_i + \hat{\beta}_2 \times 1 + \sum \hat{\beta}_j control_{ij} \quad (14)$$

$$\widehat{CAR}_i[-1,1] = \alpha_i + (\hat{\beta}_1 + \hat{\beta}_3)TT_i + \hat{\beta}_2 + \sum \hat{\beta}_j control_{ij} \quad (15)$$

To conclude, $\hat{\beta}_1$ describes the impact of top-tier advisors in equity offers and $(\hat{\beta}_1 + \hat{\beta}_3)$ in all-cash offers.

5 OLS Regressions of Announcement Returns

5.1 *The Impact of Top-tier Advisory*

Table 4 presents the results for the cross-sectional OLS regressions of bidders' announcement returns *CAR [-1, 1]*. Different models and coefficients are specified in equations (6)–(15).

In model 1, the coefficient for *TT5* is 0.016 and weakly statistically significant with the *t*-statistic 1.78. This suggests that bidders using at least one top-tier advisor experience 1.6% higher announcement returns, *ceteris paribus*. The finding is in line with the *higher returns hypothesis* (H1) and Golubov et al. (2012), but opposite to Kovanen (2008).

Table 5 summarizes the numerical interpretations for the dummy interactions. Importantly, all coefficient estimates $\hat{\beta}_1$, $\hat{\beta}_2$ and $\hat{\beta}_3$ are statistically significant at least at the 5% level in all models 2–4.

Firstly, the coefficient $\hat{\beta}_1$ is positive in all models 2–4, ranging from 0.027 to 0.034. This suggests that using a top-tier advisor in equity offers is associated with higher announcement returns. Thus, I fail to reject the *higher returns hypothesis* (H1) as for equity offers. In addition, the magnitude of the coefficient decreases first from 0.034 to 0.029, when I expand the top-tier definition from five top-ranking advisors (*TT5* in model 2) to eight top-ranking advisors (*TT8* in model 3), and further to 0.027, when I account for the ten top-ranking advisors (*TT10* in model 4). This finding is reasonable and further supports the theory that advisors with higher reputation catch more synergies to their buy-side clients.

However, the findings in all-cash offers are the opposite. The coefficients ($\hat{\beta}_1 + \hat{\beta}_3$) range from -0.013 to -0.007 suggesting that bidders that use a top-tier advisor in all-cash offers experience lower abnormal returns, *ceteris paribus*. Thus, I reject the *higher returns hypothesis* (H1) as for all-cash offers. Most interestingly, the findings are consistent with the *method of payment hypothesis* (H2), as using a top-tier advisor

TABLE 4: Cross-sectional Regressions

This table reports the results for cross-sectional OLS regressions of bidder's cumulative abnormal returns (market model with FTSE All-Share Index) over the window of [-1, 1] trading days relative to the acquisition announcement. *TT5*, *TT8* and *TT10* are one, if the bidder used at least one financial advisor that ranks among five, eight and ten highest, respectively, when financial advisors are ranked based on the total advisor-specific value of all European transactions announced between 1/1994 and 12/2013 and recorded in SDC Mergers and Acquisitions non-U.S. targets database, and otherwise zero. *Size* is bidder's market capitalization in $US billion. *Leverage* is the ratio of bidder's total debt and total assets. B/M is the book-to-market ratio of bidder's common stock. *Volatility* is the standard deviation of bidder's daily abnormal returns over the window of [-206, -5] trading days. *BHAR* are the market-adjusted (FTSE All-Share Index) returns on the bidder's primarily traded common stock in the window of [-206, -5] trading days. *Relative* is the ratio of US$ deal value and bidder's US$ market capitalization. *Cash*, *Hostile*, *Tender*, *Diversify*, *Cross-Border* and *Rumor* are one, if the deal is an all-cash offer, categorized in SDC as hostile, categorized in SDC as a tender offer, is a cross-border transaction, occurs between target and bidder that do not share a common 2-digit SIC code and first became public as a rumor according to SDC, respectively, and otherwise zero. Heteroskedasticity-robust *t*-statistics are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

	Model 1		**Model 2**		**Model 3**		**Model 4**	
TT5	0.016	*	0.034	***				
	(1.78)		(2.84)					
TT8					0.029	**		
					(2.07)			
TT10							0.027	**
							(2.06)	
TT5 × Cash			-0.047	***				
			(-3.06)					
TT8 × Cash					-0.036	**		
					(-2.32)			
TT10 × Cash							-0.036	**
							(-2.51)	
Size	0.000		0.000		0.000		0.000	
	(-1.34)		(-1.04)		(-1.11)		(-1.07)	
Leverage	-0.017		-0.020		-0.022		-0.019	
	(-0.72)		(-0.87)		(-0.91)		(-0.83)	
B/M	0.024	***	0.024	***	0.022	***	0.022	***
	(3.16)		(3.23)		(2.75)		(2.72)	
Volatility	-0.695	***	-0.730	***	-0.683	***	-0.691	***
	(-3.99)		(-4.18)		(-4.00)		(-4.06)	
BHAR	0.016		0.017		0.016		0.017	
	(1.31)		(1.40)		(1.33)		(1.38)	
Relative	0.007		0.007		0.007		0.008	
	(0.89)		(0.91)		(0.94)		(0.96)	
Cash	0.012	*	0.023	***	0.025	***	0.027	***
	(1.77)		(3.06)		(2.92)		(3.17)	

TABLE 4 continues on the next page.

TABLE 4 continued from the previous page.

	Model 1		Model 2		Model 3		Model 4	
Hostile	-0.019		-0.021		-0.021		-0.021	
	(-1.36)		(-1.51)		(-1.46)		(-1.44)	
Tender	-0.012		-0.012		-0.012		-0.012	
	(-1.51)		(-1.54)		(-1.54)		(-1.47)	
Diversify	-0.010		-0.012		-0.011		-0.011	
	(-1.02)		(-1.24)		(-1.15)		(-1.12)	
Cross-Border	0.002		0.002		0.002		0.001	
	(0.23)		(0.28)		(0.25)		(0.07)	
Rumor	-0.025	**	-0.026	**	-0.024	**	-0.024	**
	(-2.14)		(-2.22)		(-2.09)		(-2.08)	
Intercept	-0.006		-0.004		-0.005		-0.006	
	(-0.21)		(-0.14)		(-0.18)		(-0.20)	
Year dummies	Yes		Yes		Yes		Yes	
N	485		485		485		485	
R^2	0.103		0.118		0.114		0.113	
F	2.200		2.170		2.200		2.270	

TABLE 5: Interpretation of Interaction Dummies

This table presents the coefficients for *TT5*, *TT8* and *TT10* in OLS regression models 2–4, when the OLS regression results are rearranged as follows:

$$\widehat{CAR_i}[-1,1] = \alpha_i + (\hat{\beta}_1 + \hat{\beta}_3 cash_i)TT_i + \hat{\beta}_2 cash_i + \sum \hat{\beta}_j control\ variable_{ij}$$

Deal description	Coefficient for TT5/TT8/TT10	Model 2	Model 3	Model 4
Equity offers *Cash = 0*	$\hat{\beta}_1 + \hat{\beta}_3 \times cash$ $= \hat{\beta}_1 + \hat{\beta}_3 \times 0$ $= \hat{\beta}_1$	0.034	0.029	0.027
All-cash offers *Cash = 1*	$\hat{\beta}_1 + \hat{\beta}_3 \times cash$ $= \hat{\beta}_1 + \hat{\beta}_3 \times 1$ $= \hat{\beta}_1 + \hat{\beta}_3$	0.034 + (-0.047) = -0.013	0.029 + (-0.036) = -0.007	0.027 + (-0.036) = -0.009

appears to benefit bidder shareholders only in the case of equity offers.

5.2 *The Impact of Control Variables*

As for controls relating to the characteristics of the bidder, the book-to-market ratio *B/M* is positively related to the announcement returns, consistent with Dong et al. (2006). The coefficients, ranging from 0.022 to 0.024, are both economically and highly statistically significant in all models 1–4. In addition, information asymmetry appears to have a negative effect on bidders' announcement returns as predicted based on Moeller et al. (2007). The magnitude of the *volatility* coefficient, ranging from -0.683 to -0.730, may appear irrationally large at the first sight, but is justifiable given the mean and standard deviation of the variable (see Table 2). The other bidder characteristic variables *size*, *leverage* and *BHAR* are statistically insignificant in all models, contrary to Moeller et al. (2004), Maloney et al. (1993) and Rosen (2006), respectively.

As to deal characteristics, all variables apart from *cash* and *rumor* are insignificant in explaining bidders' announcement returns. In line with Travlos (1987), the coefficients of *cash* are positive and statistically significant in all models 1–4. The coefficients of *rumor*, with values ranging from -0.026 to -0.024, are negative and fairly statistically significant in all models. This finding is new to the academia and I discuss it in more detail in Appendix C. In addition, the coefficients for *hostile* and *diversify* have the expected signs.

6 Discussion and Further Analysis

6.1 *Method of Payment Matters*

The most interesting result of this study is that the impact of advisor reputation on bidders' announcement returns is clearly positive in equity offers, but slightly negative in all-cash offers. As hypothesized, the most likely explanation for the finding is that the higher level of complexity in equity offers (Servaes and Zenner, 1996) reveals the skills of top-tier advisors. When the level of needed skills increases, it is natural that more skilled advisors perform relatively better. Firstly, equity offers include an additional

valuation and negotiation element compared to all-cash offers, since the target shareholders will become bidder shareholders after the completion of the transaction. Thus, the bidder has to convince the target shareholders of the future valuation of the combined companies. Top-tier investment banks may be better at communicating and certifying this value and, consequently, reaching a lower payment premium for the deal. Namely, top-tier advisors are considered successful negotiators, when the target company does not employ a top-tier advisor (e.g. Kale et al., 2003; Golubov et. al., 2012). Secondly, in stock offers, if the acquirer does not hold the shares required for the transaction in treasury, its financial advisor has to plan and execute either an issuance or a repurchase of shares. The need to obtain the shares to be used as a payment further increases the required expertise in "putting the package together" (Servaes and Zenner, 1996).

6.2 *Issues in Bidder-Advisor Matching*

As Golubov et al. (2012) note, a standard cross-sectional OLS regression can be imprecise in estimating the causal relation between financial advisor reputation and bidders' announcement returns, since the choice of financial advisor may be determined endogenously. The difference of means *t*-tests presented in Table 2 show that the average bidder and deal characteristics are not identical in the subsamples of top-tier-advised and other deals. Therefore, it is likely that certain factors, whether related to the bidder or the planned deal, affect the bidder's decision to employ a top-tier investment bank. Thus, it is theoretically possible that the observed positive and statistically significant coefficients for variables *TT5, TT8* and *TT10* result from an unobserved factor that affects positively both the probability that a bidder selects a top-tier advisor and the actual announcement returns. Therefore, based on the OLS regressions of this study, a causal deduction that choosing a top-tier financial advisor leads to higher announcement returns is not completely reliable.

Golubov et al. (2012) control for the said endogeneity in bidder-advisor matching using the two-stage procedure in Heckman (1979). However, in line with Kovanen (2008), I decide not to control for endogeneity. A successful Heckman two-stage procedure in

accordance with Golubov et al. (2012) would require extensive gathering of advisor data[9] that are likely to be more unreliable and incomplete for the European companies. In addition, the fact that the magnitude of the coefficients of the different top-tier variables decreases gradually with the extension of the top-tier variable definition, as discussed in Section 5.1, enhances the credibility of the results.

6.3 *Top-tier Investment Banks in Europe*

To the best of my knowledge, this is the first European study to document a positive relation between the use of top-tier investment banks and bidders' announcement returns. The finding is interesting in the sense that many of the same advisors belong to the top-tier both in the U.S. and Europe[10]. These global top-bankers seem to be able to beat the European non-top-tier regional experts such as BNP Paribas in France and Nordea in Scandinavia.

At the first sight, my results appear to be inconsistent with Kovanen (2008), who finds a negative or at best statistically insignificant relation between advisor reputation and bidders' announcement returns. However, the results of these two studies do not necessarily conflict, since my sample contains only public, but both cross-border and domestic transactions, whereas that of Kovanen (2008) contains both public and private, but solely cross-border transactions. To compare the results, I interact the dummy variables *TT5* and *cross-border* in an additional cross-sectional regression:

$$CAR_i[-1,1] = \alpha_i + \beta_1 TT5_i + \beta_2 crossborder_i + \beta_3 (TT5_i \times crossborder_i) + \sum \beta_j control_{ij} + \varepsilon_i \quad (16)$$

I present the regression output in Appendix B. The coefficient $\hat{\beta}_1$ for *TT5* in domestic acquisitions is 0.031 and the coefficient ($\hat{\beta}_1$+ $\hat{\beta}_3$) for *TT5* in cross-border acquisitions is 0.031 + (-0.035) = -0.004. The coefficients $\hat{\beta}_1$ and $\hat{\beta}_3$ are statistically significant at the conventional levels, whereas the coefficient $\hat{\beta}_2$ of *cross-border* is statistically

[9] Advisor data concerning each previous equity issue, debt issue, merger or acquisition of each bidder in the sample.

[10] Comparing my advisor rankings to those of Golubov et al. (2012), I find that Goldman Sachs, Bank of America Merrill Lynch, Morgan Stanley, JP Morgan, Citi, Credit Suisse, Lazard, UBS and Deutsche Bank belong to top ten rankings on both continents. The only difference is that Rothschild replaces Barclays Capital in Europe.

insignificant. These results imply that using a top-tier advisor in cross-border deals would have a slight negative effect on bidders' announcement returns. Thus, my results and those of Kovanen (2008) seem to be consistent as for the cross-border deals.

7 Conclusion

In this bachelor's thesis, I analyzed, if acquirer's decision to employ a top-tier investment bank is associated with higher acquisition announcement returns, in the European market for mergers and acquisitions. In addition, I separated the potential impact of top-tier M&A advisory with respect to the method of payment of the deal. The sample consisted of 485 public-to-public deals in EU15 countries, Norway and Switzerland, announced between 1/1994 and 12/2013.

Firstly, I split the investment banks employed by the bidders of the sample into *top-tier* and *non-top-tier* based on the advisor-specific total values of all European deals during the timespan of the study. Then, I calculated the market model abnormal returns for the bidders over the short-term acquisition announcement window. Finally, I regressed the announcement returns on the top-tier indicator, its interactions and a set of relevant control variables.

My findings are mainly consistent with Golubov, Petmezas and Travlos (2012), who find a positive connection between the choice of top-tier investment banks and bidders' announcement returns in U.S. public-to-public transactions, but inconsistent with McLaughlin (1992), Servaes and Zenner (1996), Hunter and Jagtiani (2003) and Ismail (2010), who find negative or statistically insignificant relations.

However, I add to the findings of Golubov et al. (2012) by showing that the impact of advisor reputation differs with respect to the method of payment, being positive for stock offers and slightly negative for all-cash offers. According to my explanation, top-tier investment bankers are more capable of responding to the higher level of complexity (Servaes and Zenner, 1996) and required skills in stock offers. In addition, to the best of my knowledge, this is the first European study to document a positive relation between the use of top-tier financial advisors and announcement returns to

bidding companies. Finally, the findings are robust to three different definitions of top-tier advisory.

The results of this study have two practical implications to the bidders in the European mergers and acquisitions market. Firstly, bidders of public target companies should still resort to the assistance of top-ranking investment banks, if they plan to compensate the target company shareholders with common stock. However, bidders that are able and willing to finance the planned deals completely with cash should carefully re-evaluate their decisions to choose a top-tier financial advisor.

APPENDIX A: Yearly and Regional Distributions

FIGURE 1: Observations by Year

This figure presents the distribution by calendar year for a sample of 485 European public-to-public acquisitions announced between 1/1994 and 12/2013. Horizontal axis is the calendar year of acquisition announcement. Vertical axis is the number of merger announcements.

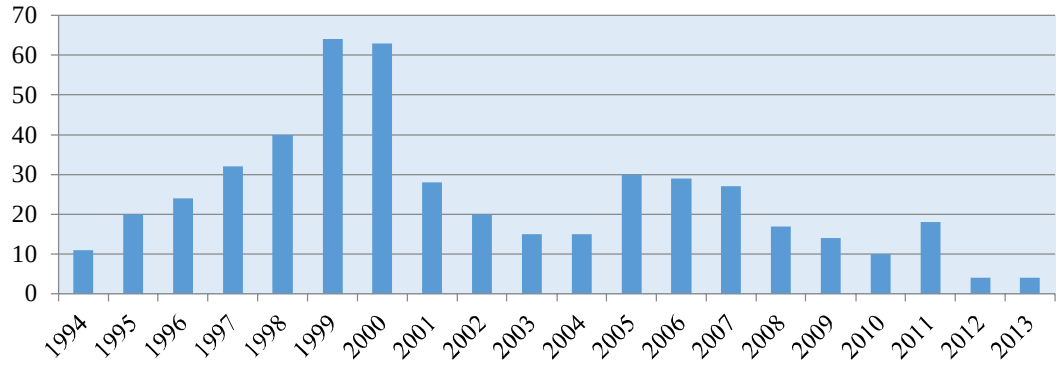

TABLE 6: Observations by Region

This table presents the regional distribution of acquiring and target companies in a sample of 485 European public-to-public acquisitions announced between 1/1994 and 12/2013. *Central Europe* covers Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland. *Mediterranean* covers Greece, Italy, Portugal and Spain. *Scandinavia* covers Denmark, Finland, Norway and Sweden. *UK and Ireland* are United Kingdom and Ireland.

	Acquirers		**Targets**	
	N	**(%)**	**N**	**(%)**
Central Europe	131	27.01 %	117	24.12 %
Mediterranean	28	5.77 %	22	4.54 %
Scandinavia	68	14.02 %	74	15.26 %
UK and Ireland	258	53.20 %	272	56.08 %
Total	**485**	**100.00 %**	**485**	**100.00 %**

APPENDIX B: Cross-border Interactions

TABLE 7: Cross-border Interactions

This table reports the results for cross-sectional OLS regressions of bidder's cumulative abnormal returns (market model with FTSE All-Share Index) over the window of [-1, 1] trading days relative to the acquisition announcement. *TT5*, *TT8* and *TT10* are one, if the bidder used at least one financial advisor that ranks among five, eight and ten highest, respectively, when financial advisors are ranked based on the total advisor-specific value of all European transactions announced between 1/1994 and 12/2013 and recorded in SDC Mergers and Acquisitions non-U.S. targets database, and otherwise zero. *Size* is bidder's market capitalization in $US billion. *Leverage* is the ratio of bidder's total debt and total assets. B/M is the book-to-market ratio of bidder's common stock. *Volatility* is the standard deviation of bidder's daily abnormal returns over the window of [-206, -5] trading days. *BHAR* are the market-adjusted (FTSE All-Share Index) returns on the bidder's primarily traded common stock in the window of [-206, -5] trading days. *Relative* is the ratio of US$ deal value and bidder's US$ market capitalization. *Cash*, *Hostile*, *Tender*, *Diversify*, *Cross-Border* and *Rumor* are one, if the deal is an all-cash offer, categorized in SDC as hostile, categorized in SDC as a tender offer, is a cross-border transaction, occurs between target and bidder that do not share a common 2-digit SIC code and first became public as a rumor according to SDC, respectively, and otherwise zero. Heteroskedasticity-robust *t*-statistics are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Variable	**Coefficient**	***t*-statistic**
TT5	0.031**	2.49
TT5 × Cross-Border	-0.035**	-2.07
Size	0.000	-1.53
Leverage	-0.015	-0.66
B/M	0.023***	3.09
Volatility	-0.758***	-4.07
BHAR	0.017	1.39
Relative	0.008	1.00
Cash	0.012*	1.76
Hostile	-0.018	-1.31
Tender	-0.010	-1.30
Diversify	-0.009	-0.97
Cross-Border	0.012	1.27
Rumor	-0.025**	-2.09
Intercept	-0.012	-0.42
Year Dummies	Yes	
N	485	
R^2	0.111	
F	2.20	

APPENDIX C: Overreaction to Takeover Rumors

Zivney, Bertin and Torabzadeh (1996) show that in cases where takeover rumors are followed by an official acquisition announcement ("**true rumors**"), target shareholders experience remarkable cumulative average abnormal returns during the 20 days preceding rumor publication (8.18%), on the day of rumor publication (4.56%) and during the 20 days following rumor publication (5.62%).[11] In addition, they find evidence in certain subsamples that target shareholders overreact to takeover rumors. Jarrell and Poulsen (1989) show without discussing the exact date of rumor publication that pre-offer press speculation[12] leads to accumulation of abnormal returns on the speculated target stock during the period preceding the official acquisition announcement. In addition, they document that rumored targets experience relatively lower (-8.4%), but still positive (20.5%) announcement returns over the short-term window of [-1, 1] days relative to the official acquisition announcement. The findings of these two studies suggest that the information content of an acquisition is at least partially reflected in the target company stock price already before the official acquisition announcement.

The theory on takeover rumors is harder to form in case of bidder companies, since some bidders react to acquisition announcements very positively and some very negatively. Therefore, analyzing takeover rumors systematically in regressions of bidders' announcement returns would require observing *ex ante* at the time of the rumor publication, whether the rumored transaction is positive or negative from bidder shareholders' perspective. However, if both positive and negative takeover rumors are assumed to lead into a reaction of similar magnitude[13], but opposite sign, and given the fact that the mean bidder *CAR [-1, 1]* is close to zero in my sample (see Table 3), the finding that the variable *rumor* receives negative and statistically fairly significant

[11] In addition, Pound and Zeckhauser (1990) find evidence of cumulation of abnormal returns on the target company shares before the rumor publication, but their sample includes only 42 rumored target companies.
[12] Including "pure" takeover rumors and other press reports that might indicate that the target company will be subject of a takeover.
[13] Meaning for example, that a positive and a negative rumor that would lead to reactions of +2% and -2%, respectively, at official announcement lead to +1% and -1% at rumor publication.

coefficients in all regressions 1–4 presented in Table 5, is confusing. To study the observed phenomenon further, I calculate the cumulative average abnormal returns (CAAR) for the subsamples of 67 rumored (*rumor* = 1) and 418 unrumored (*rumor* = 0) deals. Figure 2 presents the plotted CAARs.

FIGURE 2: CAARs for Rumored and Unrumored Deals

This figure presents the cumulative average abnormal returns (CAAR) for subsamples of 67 rumored and 418 other deals, over the event window of [-10, 10] days relative to the acquisition announcement. Horizontal axis is days relative to the acquisition announcement. Vertical Axis is CAAR. Dashed graph represents the sample of rumored deals. Solid graph represents the sample of other deals.

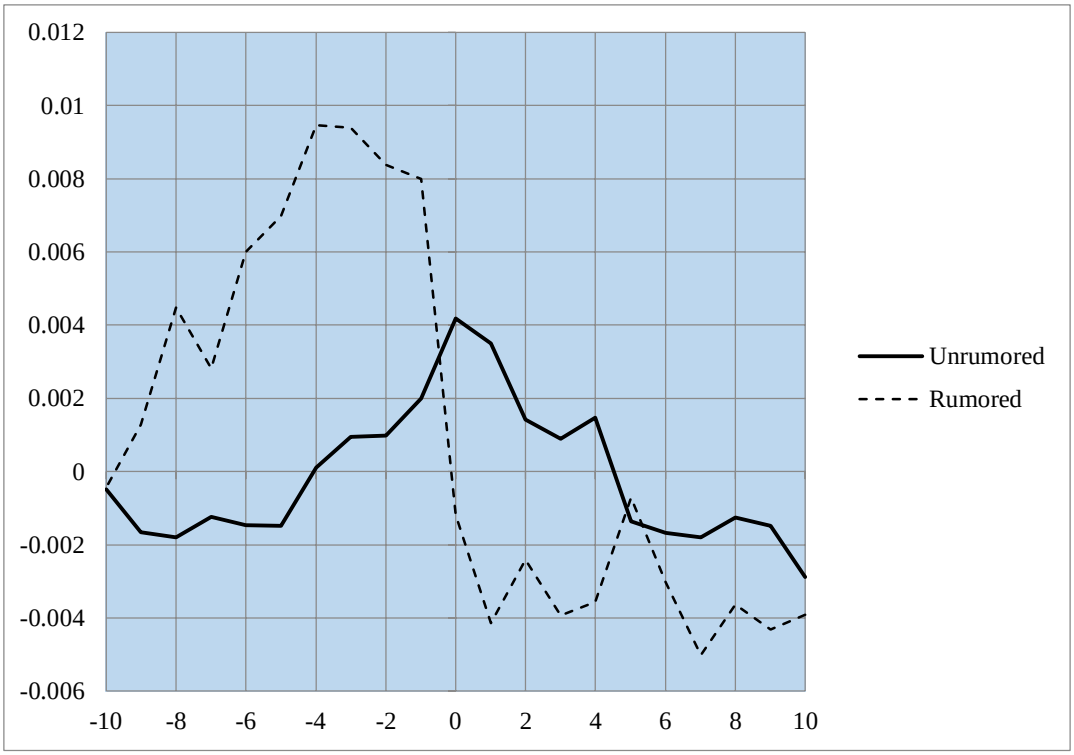

Figure 2 shows, how rumored deals accumulate abnormal returns during the period before the official acquisition announcement, which then disappear over the announcement window of [-1, 1] trading days relative to the acquisition announcement. The only viable explanation for this discovery is that bidder shareholders overreact to rumors that are considered positive *ex ante* to the acquisition announcement. Intuitively, this seems reasonable, since at the moment of rumor publication, the shareholders are instantly able to assess the forthcoming operational and financial synergies, resulting from the rumored transaction, as both rumored parties are usually known. Instead, the

final method and size of compensation to be paid, which can have a fairly negative influence on the deal outcome are likely to be contained in the rumor rather non-specifically.

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