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The Impact of Financial Advisors on Risk Arbitrage Spreads: Evidence from Nordic Takeover Bids

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Abstract

Following the announcement of a public takeover bid, the target firm's stock price generally adjusts towards the offer price. However, these rarely converge, and the percentage difference that emerges forms what is commonly referred to as the risk arbitrage spread. Prior research has emphasized that the spread should reflect the probability of deal completion, the time to resolution, and the magnitude of a bid revision. Besides, related literature examining the importance of financial advisors in corporate takeovers has shown that higher-ranked banks should exert significant influence on offer outcomes. This paper explores the relationship between bidders' M&A advisors and arbitrage spreads by studying 211 public takeover bids on Nordic equity markets from 1999 through 2019. Empirically, we find that acquirers advised by top-tier investment banks are associated with significantly lower risk arbitrage spreads. We attribute the differential impact of higher-ranked advisors to their greater ability to achieve closure faster than lower-tier alternatives. The shorter time to resolution may reflect top-tier banks' superiority in terms of skills and expertise or them facing strong incentives in their fee structures to complete deals faster. The results are robust to controlling for the endogeneity of advisor-firm matching, which leads us to conclude that the bidding firms' financial advisors are important for determining offer outcomes and risk arbitrage spreads.

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1. Introduction

Following the announcement of a public takeover bid, there is generally an adjustment in the market price of the target firm. However, the post-announcement price normally diverges from the bid price, and the difference that emerges is commonly known as the arbitrage spread. Risk arbitrage refers to an investment strategy inherently linked to speculative activity that aims to profit from this price discrepancy by capturing the spread between the announcement date until its resolution. Given that the deal successfully consummates, market participants engaging in this type of trading activity will profit from the price gap, while if the transaction collapses this would incur a loss that is normally much greater.

Arbitrage spreads are important to study due to two reasons. First, the amount of capital allocated towards risk arbitrage has increased greatly in the past years, indicating an enlarged interest in this investment strategy. According to Backstop BarclayHedge (2020), the assets under management of risk arbitrage hedge funds grew almost seventh fold between 2000 and 2019, from $11.7 billion to $72.4 billion. Second, extant literature reports that investors can earn large gains from employing a trading strategy built on the principles of risk arbitrage, documenting positive abnormal returns ranging from 1% to 27% on an annual basis (Larcker & Lys, 1987; Mitchell & Pulvino, 2001; Baker & Savasoglu, 2002; Jindra & Walkling, 2004).

Prior research exploring risk arbitrage suggests that spreads are significantly related to: i) the probability of deal completion; ii) the time to resolution; and iii) the magnitude of price amendments (Jindra & Walkling, 2004; Branch & Wang, 2008). Further, related literature investigating the impact of bidders' financial advisors on offer outcomes shows that investment banks exert significant influence in negotiation processes. More specifically, several papers highlight that higher-ranked advisors in mergers and acquisitions (M&As) affect the likelihood of takeover success and the offer durations (Rau, 2000; Kale et al., 2003; Hunter & Jagtiani, 2003; Golubov et al., 2012). Building on these two fields of literature, we therefore hypothesize that top-tier M&A advisors hired by acquiring firms have an impact on risk arbitrage spreads.

To assess the influence of financial advisors, we examine 211 public takeover bids on the Nordic equity markets between 1999 and 2019. Our findings show that spreads one day after the offer announcements are significantly lower in transactions where acquiring companies are advised by top-tier advisors. The differential impact of higher-ranked banks can primarily be attributed to them being more capable of completing deals faster. The results are

robust to controlling for the endogeneity of advisor-firm matching, which leads us to conclude that the acquirers' financial advisors are important for determining offer outcomes and risk arbitrage spreads.

To our knowledge, no research has been conducted to investigate the impact of financial advisors on risk arbitrage spreads. Therefore, our findings could have potential implications for the understanding of spreads and for trading decisions related to risk arbitrage as an investment strategy. Conducting the analysis in the Nordics is interesting given that there are reasons to believe that the financial advisor's impact on the probability of deal completion and the time to resolution may differ from the U.S, where most of the research has been carried out (Rau, 2000; Kale et al., 2003; Hunter & Jagtiani, 2003; Golubov et al., 2012). The existing empirical evidence in Europe, however, is scarce despite e.g. systematic differences in ownership structures between European and American companies (Skog, 2004). More specifically, the ownership structures of European firms are generally more concentrated, which should be reflected in a larger share of deals being pre-negotiated in European countries. Ultimately, this should lead to less uncertainty with regards to the outcome of M&A transactions, which implies that the role of the financial advisors may differ across the geographies. We choose the Nordics for our analysis because it is a coherent region with a unique institutional setting, while sharing characteristics with the rest of Europe (Lekvall, 2014).

The remainder of this thesis is organized as follows. Section 2 provides an overview of the previous research. Section 3 introduces our research hypotheses. Section 4 describes the data and methodology we use in this study. Section 5 presents the results of our analysis together with a discussion of their possible implications. Section 6 tests the firmness of our results by conducting relevant robustness tests and Section 7 concludes the paper.

2. Previous Research

2.1. Fundamentals of Risk Arbitrage and Arbitrage Spreads

When announcing the offer price in a public takeover bid, the acquirer reveals its valuation of the target firm. In an efficient capital market, the target company's share price should immediately adjust following an acquisition announcement to reflect the offer terms (Baker & Savasoglu, 2002). However, the terms of the acquisition are rarely fully incorporated into the target's stock and therefore it might trade at a price that is lower than its efficient market price. According to Shleifer and Vishny (1997), this market inefficiency leaves an opportunity for generating abnormal profits.

The discrepancy that emerges between the target's market price and the bid price is commonly referred to as the risk arbitrage spread. The arbitrage spread reflects how the market values the target firm, conditional on the existence of the bid (Jindra & Walkling, 2004). Higher prices following offer announcements should lead to smaller, and in some cases also negative spreads. Jindra and Walkling (2004) report that 23% of the arbitrage spreads in their sample are negative, indicating post-announcement prices that are greater than the offer prices. A possible explanation for the occurrence of negative spreads may be that investors are expecting upward bid revisions. Positive spreads are, however, more likely to emerge since risk arbitrageurs tend to price the targets' shares at a discount to the bid prices due to uncertainties with regards to offer outcomes and the time value of money.

The ultimate objective of risk arbitrage is to profit from capturing the arbitrage spread. To be able to lock in the percentage difference between the offer price and the target's market price, an investor is required to take a position immediately after the announcement. The appropriate trading strategy is dependent on the structure of the deal, where the most important difference is between a cash transaction and a deal including payment in shares (Cornelli & Li, 2002). In a cash transaction, risk arbitrage involves buying shares of the target company on the announcement day and holding it up until consummation. The profit is then realized by selling the shares to the bidder. In turn, for a deal that entails payment in shares, the value of the offer varies with the share price of the acquiring firm.[1] A risk arbitrageur adopting the same strategy as in a cash transaction by simply buying shares in the target company might suffer significant

[1] This is true for all equity deals except for those including collar terms, where offer prices are fixed and not dependent on the market prices of the acquiring companies.

losses as the post-announcement share price of the bidding company is expected to decrease (Amihud et al., 1990; Martin, 1996). Hence, for an investor to hedge its position in a stock-swap deal, the purchase of target shares needs to be accompanied by shorting the acquirer's stock simultaneously.

In contrast to classic arbitrage outlined by Fama (1970), risk arbitrage is subject to risk given that an investor does not purchase and tender the target's stock simultaneously (Fich & Stefanescu, 2003). However, several studies exploring the profitability of this investment strategy suggest that it should be associated with positive abnormal returns. In the upper range, Jindra and Walkling (2004) report monthly excess returns of 2%, which corresponds to annualized abnormal returns of approximately 27%. Yet, most researchers find somewhat lower abnormal returns, spanning between 1% to 10% on an annual basis (Larcker & Lys, 1987; Mitchell & Pulvino, 2001; Baker & Savasoglu, 2002).

2.2. Deal Characteristics Related to Risk Arbitrage Spreads

The preceding section (2.1) presented the basics of risk arbitrage. This section intends to provide a deeper understanding of the underlying mechanisms in this investment strategy by highlighting the components that are important for explaining arbitrage spreads. Theory suggests that risk arbitrage spreads are significantly related to: i) the probability of deal completion; ii) the time to resolution; and iii) the magnitude of price amendments (Jindra & Walkling, 2004; Branch & Wang, 2008).

Jetley and Ji (2009) point out that the potential deal failure can be seen as the main source of risk in risk arbitrage. Assuming that returns can be considered as compensation for the completion risk, any elements impacting the likelihood of completion in corporate takeovers will affect arbitrage spreads (Baker & Savasoglu, 2002). More precisely, variables raising the probability of takeover success should be negatively correlated with risk arbitrage spreads, whereas characteristics increasing the likelihood of failure should be positively related to spreads. Jindra and Walkling (2004) also find arbitrage spreads to be related to the size of the price revision that materializes. Their results show that spreads are smallest for offers amended upwards, while being largest for bids that are revised downwards. Further, prior research shows that variables decreasing offer durations should be negatively related to risk arbitrage spreads as: i) investors will receive the compensation more quickly (Officer, 2007);

and ii) incurred holding costs will be lower (Jindra & Walkling, 2004). The opposite relationship holds for factors that are associated with a longer time to resolution.

Extant literature has identified several variables that are critical for explaining arbitrage spreads, where some of the most commonly examined ones are the deal nature (friendly vs. hostile offers), bid premium, bidder toehold, pre-bid run-up, consideration structure (cash vs. equity deals) and target size (Jindra & Walkling, 2004; Branch & Wang, 2008; Jetley & Ji, 2009). Examples of other deal characteristics that have received less attention in academic research are rumors preceding takeover bids (Andries & Virlan, 2017) and the targets' trading volumes (Jetley & Ji, 2009). Interestingly, many of the variables impacting the arbitrage spread do often play dual roles. For instance, characteristics that increase the probability of deal completion for the initial bidder should reduce arbitrage spreads. At the same time, an increased likelihood of realizing the initial bid implies a reduced need for amending the price, which theoretically should enlarge spreads.

2.3. The Role of Financial Advisors in M&A Transactions

During the peak of M&As in 2007, $4.2 trillion was spent by firms on transactions worldwide, where approximately 85% of these deals by deal value were advised by investment banks (Golubov et al., 2012). The financial advisor industry is primarily led by top-tier investment banks that have a reputation as experts in M&A transactions. In theory, this should be reflected by these firms providing their clients with superior assistance in return for premium fees (Chemmanur & Fulghieri, 1994). However, existing research fails to support this relationship between reputation and quality, which has raised several questions about why firms hire top-tier financial advisors in corporate takeovers. This has also led to an increased effort among researchers to study what the potential sources of top-tier improvement might be (Hunter & Jagtiani, 2003). Two commonly researched theories focus on the impact of financial advisors on the likelihood of deal completion and the time to resolution, which are presented in the following subsections.

2.3.1 Probability of Deal Completion

Prior literature reports that financial advisors greatly influence the likelihood of deal completion. Rau (2000) examines a sample of 2,683 mergers and 438 tender offers from 1980

through 1994. In tender offers, he shows that bidding companies hiring first-tier advisors complete a significantly greater share of transactions compared to acquirers engaging second or third-tier banks. Conversely, he finds no statistically significant differences between advisor classifications in merger deals. Rau (2000) attributes his findings to top-tier advisors facing stronger deal completion incentives in their fee structures. He believes that the variations in completion rates between merger and tender offers are to be expected, since banks often charge higher proportions of fees contingent upon the completion of deals in tender offers than they do in mergers.

Hunter and Jagtiani (2003) nuance the interpretation of Rau (2000). Their findings show that acquiring firms advised by top-tier advisors are associated with a higher likelihood of completing deals. However, they do not consider the advisory fees to be the main driver behind their results. Alternately, they assign their findings to the general belief that higher-ranked investment banks are more capable of achieving closure than lower-tier advisors. In a similar manner, Kale et al. (2003) study 413 tender offers between 1981 and 1994 and report that bidders hiring more reputable advisors have a greater probability of completing deals. By also investigating whether achieving closure is the sole objective of advisors, they find that higher-ranked banks are more probable to withdraw from value-destroying takeovers albeit facing strong deal completion incentives through contractual features.

There is also research indicating that top-tier banks should not be hired to ascertain deal completion for acquiring firms. Golubov et al. (2012) examine the relationship between the reputation of financial advisors and the price and quality of their services by studying an extensive sample of 4,803 U.S. acquisitions between 1996 and 2009. In their subsample of public deals, they find no evidence of higher-ranked investment banks being associated with a higher probability of completing transactions.

2.3.2 Time to Resolution

Past research on the influence of M&A advisors on the time to resolution shows that higher-ranked investment banks have a significant impact on deal durations. Since investment banks often are responsible for the negotiation processes, Golubov et al. (2012) believe that it is particularly interesting to examine the relationship between the bidders' M&A advisors and the time to resolution. They propose two contrasting theories, where the "skilled advisor" assertion suggests that top-tier investment banks are associated with shorter offer durations as

higher-ranked advisors should be able to work through deals quicker due to their superior skills and expertise. Alternatively, they claim that it is also plausible that more reputable advisors imply a longer time to resolution, which they refer to as the "diligent advisor" proposition. This is caused by top-tier banks having greater reputational capital at stake, and therefore they have a greater incentive to evaluate the transaction terms more carefully to negotiate more favorable terms for the bidding company. Golubov et al. (2012) show that acquiring companies employing higher-ranked banks are associated with shorter deal durations. Thus, they find support for their "skilled advice" assertion, suggesting that more reputable advisors are superior to lower-tier banks in terms of skills and expertise.

Similarly, Hunter and Jagtiani (2003) report that transactions are typically completed faster when bidding firms are advised by at least one top-tier advisor. However, they propose an alternative explanation as to why the choice of a higher-ranked M&A advisor is significantly related to the time to resolution. While they find the effect of advisory fees on the probability of deal completion as negligible, they claim that fees have a significant impact on the offer duration. More specifically, the time to resolution is reduced when the proportion of fees relative to the deal value is large. They believe that this is particularly true for takeovers where acquirers are advised by top-tier advisors, as these investment banks often charge larger fees in return for their superior services.

Previous literature has also examined the impact of investment banks by using other advisor classifications. A paper written by Song et al. (2013) focuses on studying the role of "boutique" advisors in the M&A market, which in their sample often are smaller banks being more specialized by industry. They find that acquiring firms hiring M&A boutiques significantly lengthen the time to resolution. Rather than considering this result as a causal effect, Song et al. (2013) believe that this is a reflection of boutique advisors normally being hired in complex deals that require their sector expertise and skills to a greater extent.

3. Research Hypotheses

The key novelty of this paper is to examine whether the bidders' financial advisors impact arbitrage spreads. Prior research exploring risk arbitrage shows that spreads are significantly related to the probability of deal completion, time to resolution, and magnitude of bid revisions (Jindra & Walkling, 2004; Branch & Wang, 2008). By summing up the empirical evidence on the influence of the acquiring companies' financial advisors on offer outcomes, it becomes evident that investment banks play a critical role in M&A transactions. Most of the researchers covering the relationship between advisors and deal completion show that higher-ranked banks exert significant influence on the probability of success in corporate takeovers (Rau, 2000; Kale et al., 2003; Hunter & Jagtiani, 2003). As a result, we also expect this to be true for the Nordic equity markets, and hence our first null-hypothesis can be formulated as:

$H0_1$: Hiring a top-tier investment bank as a financial advisor in a public takeover offer does not affect the probability of deal completion.

In turn, prior literature investigating the financial advisor's impact on the time to resolution reports that investment banks should be significantly related to offer durations (Hunter & Jagtiani, 2003; Golubov et al., 2012). In line with these studies, we expect the choice of a top-tier M&A advisor to be correlated with the deal duration. Thus, the second null-hypothesis that we test is the following:

$H0_2$: Hiring a top-tier investment bank as a financial advisor in a public takeover offer does not affect the time to resolution.

However, past research analyzing the relation between the use of top-tier advisors and the magnitude of bid revisions is, to our knowledge, non-existent. Nevertheless, papers exploring adjacent topics could provide an understanding to the advisor impact on the magnitude of bid revisions. For instance, Golubov et al. (2012) posit that higher-ranked banks have superior negotiation skills, and therefore should be better at arranging transaction terms

that are more accurate and favorable to their clients. In terms of price revisions, this may imply that top-tier advisors have a greater ability to set both initial and future prices more precisely, which most likely are beneficial to their clients. Therefore, our third null-hypothesis can be written as:

$H0_3$: Hiring a top-tier investment bank as a financial advisor in a public takeover offer does not affect the magnitude of a bid revision.

As mentioned in the beginning of this section, the theory suggests that the spread should reflect expectations on not only the magnitude of a price revision, but also the likelihood that a deal will go through, and the time to resolution. Given that we expect a top-tier bank to significantly influence these variables, we aim to contribute to existing research by testing whether the choice of a top-tier financial advisor is important for explaining the risk arbitrage spread. Therefore, our last and main null-hypothesis can be formulated as:

$H0_4$: Hiring a top-tier investment bank as a financial advisor in a public takeover offer does not affect the risk arbitrage spread.

4. Data and Methodology

4.1. Data Collection and Management

We gather relevant transaction data for both successful and unsuccessful M&As being announced between January 1, 1999 and December 31, 2019 from Mergermarket and S&P Capital IQ. The search is restricted to takeovers including public targets since measuring risk arbitrage spreads in private companies is not possible.

Our initial sample is selected based on four criteria. First, the target needs to be headquartered in the Nordics.[2] Second, before the offer announcement, the bidder holds less than 50% of the target company's outstanding shares and intends to become the majority owner of the firm. Third, the structure of the deal involves payment of either pure cash or pure stock. Similar to Hsieh and Walkling (2005), we exclude transactions with mixed consideration.[3] Equity deals with collar terms are also omitted since collar offers have option-like structures (Baker & Savasoglu, 2002). Fourth, the takeover clearly identifies one company as the target and the transaction does not involve a private company nor an unlisted subsidiary.

The first screening process generates an initial sample of 440 takeover bids. Despite applying the selection criteria above, we find this set of takeovers to suffer from misclassifications, such as bids on divisions, bids on unlisted targets, and targets located in countries outside of the Nordics. Hence, we manually inspect each transaction using Mergermarket, S&P Capital IQ, and press releases to remove or reclassify deals. Moreover, when multiple acquirers announce offers on the same target, only the first bid is included. This is because we want to focus on the investors' reaction at the first takeover announcement. A bid is considered to be new if it has gone at least twelve months since the last offer was made. This is a slightly more conservative approach compared to Jindra and Walkling (2004), who consider a bid as new six months after the most recent bid. We further exclude deals targeting companies of small size, which is in line with the sorting criterion used by Golubov et al. (2012).[4]

[2] The Nordics consists of Sweden, Denmark, Finland, Norway, and Iceland. However, our final sample does not cover any transactions on the Icelandic equity market and hence we exclude Iceland in our definition of the Nordics.
[3] Offers including mixed consideration can include combinations of cash and equity as well as different types of convertibles.
[4] The size threshold is set to EUR 5 million (measured by deal value).

For the calculation of arbitrage spreads and the deal characteristics listed in Appendix 1, we collect daily stock price data and exchange rates from FinBas by SHoFDB and S&P Capital IQ. The stock prices are obtained from at least 42 trading days before the offer announcement and until the resolution of the transaction.[5] Besides, the preciseness of the announcement date is of critical importance when measuring the risk arbitrage spread. Thus, for each deal, we validate the date of the announcement using press releases to set it as accurately as possible. However, we find a few deals for which there are uncertainties with regards to the actual announcement date, and hence these transactions are omitted. We finally exclude pending offers, transactions involving acquirers with internal advisors, and takeovers that lack sufficient stock or offer price data. After applying these additional filters, we end up with a final sample consisting of 211 transactions. Detailed information about the number of transactions excluded by each criterion is presented in Table 1.

Table 1
Number of Transactions Excluded by Each Selection Criterion

The table reports the number of transactions that are removed by each selection criterion. From our initial data set, we remove 229 deals, leaving us with a final sample consisting of 211 Nordic public takeover bids between 1999-2019.

Criteria for Exclusion	Removed	Remaining
Initial Data Set	n.a.	440
Deals with Insufficient Stock or Offer Price Data	60	380
Bids with No Intention of Change in Control	50	330
Offers on Private Companies or Divisions	37	293
Transactions Including Mixed Consideration	27	266
Follow-On Bids	22	244
Bids on Multiple Targets	8	236
Transactions Involving Acquirers with Internal Advisors	7	229
Deals with Uncertain Announcement Dates	7	222
Transactions Including Targets Outside of Nordics	3	219
Pending Offers	3	216
Collar Offers	3	213
Takeovers Including Small Targets	2	211
Transactions in Final Sample	229	211

[5] Consistent with Jindra and Walkling (2004), we download share price data from at least 42 days before the takeover announcements and until the resolution of deals as this is required for our definition of pre-bid run-ups (see Appendix 1).

4.2. Measure of Advisor Ranking

In the M&A industry, advisor market share is often taken as a measure of quality, and financial advisor league tables are used as the standard for evaluation of investment banks (Golubov et al., 2012; Song et al., 2013).[6] Therefore, we download yearly financial advisor league tables based on public takeovers targeting Nordic companies from Mergermarket for the period 1999-2019. Our decision to restrict the league tables to the Nordics where the target firms are located is supported by Arena and Dewally (2017). They study 7,630 cross-border transactions from 1994 through 2012 and propose that financial advisors with substantial experience from advising on deals in the target countries can significantly impact the probability of deal completion, the time to resolution, and the bidding companies' operating performance post-completion.

We limit our analysis to the acquiring firms' M&A advisors as this is standard in past research exploring the relationship between financial advisors and offer outcomes (Rau, 2000; Kale et al., 2003; Hunter & Jagtiani, 2003; Golubov et al., 2012). Besides, target firms are more probable to hire advisors after takeover bids are announced (e.g. for conducting fairness opinions), while the information about the acquirers' financial advisors generally becomes publicly available at the time of the offer announcements. Therefore, it could potentially be difficult to measure the impact of the targets' M&A advisors on risk arbitrage spreads. Nonetheless, despite restricting our research to the bidders' financial advisors, we can conclude in Section 6 that the findings presented throughout this paper remain unaltered when controlling for the targets' advisors.

The financial advisors are classified in line with the approach used by Rau (2000), where we first rank each investment bank every year based on transaction value, and then classify them according to the average of their yearly ranking across 1999 and 2019. If an advisor has been out of the M&A advisory market for a particular year, the bank is assigned one rank lower than the total number of advisors that have been active during that year (Rau, 2000). For example, as 61 investment banks advised on deals in 2019, all the other banks that did not participate in the advisory market in that year are assigned a rank of 62. Further, Fang (2005) and Golubov et al. (2012) claim that a binary classification of the advisor ranking should be preferred to using a continuous measure. They classify a deal as top-tier if at least one of

[6] Prior research has identified other ways of ranking M&A advisors (e.g. Ismail, 2010; Bao & Edmans, 2011), however, as discussed more thoroughly in Section 7, the market shares of the investment banks should capture the effects of these over time (Sibilkov & McConnell, 2014).

the banks advising the acquiring company in the transaction belongs to the top-8 group. In our top-tier classification, we adopt the top-8 cutoff used in their papers, however, in transactions where an acquiring firm is advised by banks of different tiers, we treat them as a mixed type in line with Song et al. (2013). This is due to the difficulty of isolating the effect from hiring a top-tier advisor on the outcome of the offer, since information on how much a certain advisor has been involved in a transaction is not publicly available. In Section 6, we test the robustness of our approach by employing alternative classification methods, including the methodology used by Golubov et al. (2012) and other top-tier cutoffs. The findings presented throughout this paper continue to hold when adopting these alternative approaches.

Further, advisors are given credit for each deal on which they have provided advisory services, regardless of the transaction was completed or not. We also assign credit to the specific subsidiary that was advising on the deal, rather than to give credit to the parent company of the group. For example, when an investment bank acquires or mergers with another advisor and keeps it as an independent brand, we give full credit to the subsidiary.[7] Additionally, in M&As between investment banks that are fully integrated, we keep them separated until the transaction is completed.[8]

Table 2 presents the ranking of the financial advisors included in our sample. The top-tier investment banks are J.P. Morgan, SEB, Goldman Sachs, Nordea, Morgan Stanley, Deutsche Bank, Carnegie Investment Bank, and UBS Investment Bank. The table indicates that this ranking is consistent over time by showing the percentage of years when a bank is classified as top-tier, non-top-tier, or out of the market. When comparing the different advisor classifications, top-tier banks appear to have been active in the M&A advisory market during most of the years from 1999 through 2019, while lower-tier advisors generally have been out of the market more often. The table also shows that the top-8 advisors in our sample are typically ranked as top-tier more frequently than the rest. Besides, in Section 6, we test the firmness of our top-tier classification by employing the method used by Golubov et al. (2012), where advisors are ranked based on the accumulated transaction value that they have advised on between 1999 and 2019. Noticeably, this does not alter our ranking of investment banks since the top-8 advisors remain the same.

[7] To exemplify, credit for deals advised by Salomon Smith Barney before being fully integrated into Citigroup in 2003 is given to the former.
[8] For example, we give full credit for transactions advised by Merrill Lynch before merging with Bank of America in 2009 to Merrill Lynch.

Table 2
Financial Advisor Classification (Top 30)

The table presents the ranking of the financial advisors. In line with Rau (2000), investment banks are first ranked every year based on the transaction value (EURm) on which they have advised on for a sample of public takeover bids in the Nordics between 1999 and 2019. The advisors are then classified to the average of their yearly ranking across 1999 and 2019. If a bank has not advised on any transactions in a certain year, it is assigned one rank lower than the number of banks that advised on acquisitions during that year. The top-8 banks that come out of this ranking are considered top-tier, consistent with Fang (2005) and Golubov et al. (2012).

Rank	Financial Advisor	% of Years Classified As		
		Top-Tier	Non-Top-Tier	Not Ranked
	Top-Tier			
1	J.P. Morgan	71	29	0
2	SEB	71	29	0
3	Goldman Sachs	67	33	0
4	Nordea	52	48	0
5	Morgan Stanley	38	52	10
6	Deutsche Bank	52	38	10
7	Carnegie Investment Bank	33	67	0
8	UBS Investment Bank	43	52	5
	Non-Top-Tier (Top 9th to Top 30th)			
9	Handelsbanken Capital Markets	24	76	0
10	Lazard	43	43	14
11	Rothschild & Co.	24	71	5
12	Pareto Securities	5	90	5
13	ABG Sundal Collier	14	86	0
14	PwC	0	90	10
15	Citi	19	52	29
16	DNB Markets	5	86	9
17	Credit Suisse	24	52	24
18	Danske Bank	5	95	0
19	Swedbank	0	100	0
20	Bank of America	14	53	33
21	Deloitte	5	85	10
22	EY	0	95	5
23	KPMG	0	90	10
24	Arctic Securities	9	48	43
25	HSBC	14	43	43
26	Access Partners	0	57	43
27	Lenner & Partners	9	43	48
28	Barclays	14	29	57
29	Erneholm Haskel	5	52	43
30	BNP Paribas	5	38	57

4.3. Definitions of Risk Arbitrage Spreads

For each transaction, we compute the risk arbitrage spread from one day after the offer announcement until the deal is completed or terminated. Using the target's closing stock price one day after the announcement in the regression analyses is considered to be standard (Jindra & Walkling, 2004; Jetley & Ji, 2009; Andries & Virlan, 2017). Besides, it allows us to capture that takeovers are announced at different times during a day and makes the initial reaction of the market more comparable across the transactions. In Section 6, we test the robustness of our findings by computing the arbitrage spread two days after the offer announcement, as proposed by Branch and Wang (2008). However, employing this definition of the spread only strengthens the findings presented throughout this thesis.

The arbitrage spread for cash deals is defined as:

$$Arbitrage\ Spread_{cash,t} = \frac{P_{offer} - P_{target,t}}{P_{target,t}} \qquad \text{Equation (1)}$$

Arbitrage Spread$_{cash,t}$ represents the spread for a cash transaction on trading day *t*, P_{offer} corresponds to the offer price per share paid by an acquiring firm in cash, and $P_{target,t}$ is the closing price of the target on trading day *t*.

The arbitrage spread for equity transactions is given by:

$$Arbitrage\ Spread_{stock,t} = \frac{(P_{acquirer,t})(ER) - P_{target,t}}{P_{target,t}} \qquad \text{Equation (2)}$$

Arbitrage Spread$_{stock,t}$ corresponds to the risk arbitrage spread for an equity deal and $P_{acquirer,t}$ represents the closing price of the bidder's stock on trading day *t*. Furthermore, *ER* corresponds to the deal exchange ratio (i.e. the number of shares offered by the acquirer for each share in the target company) and $P_{target,t}$ is the target's closing share price on trading day *t*.

4.4. Sample Descriptive Statistics

Panel A and B in Table 3 show descriptive statistics by year and advisor classification, respectively. Out of the final sample consisting of 211 transactions, 69 transactions are advised by top-tier investment banks, 34 by advisors of mixed tiers, and the remaining 108 by lower-

tier banks. Noticeably, the number of transactions varies over time with most deals being announced between 2007 and 2008.

For the overall sample, the mean risk arbitrage spread is 1.3%. The average spread for top-tier advisors is 0.7%, while the mean for mixed and lower-tier-advisors is 1.0% and 1.9%, respectively. The largest positive spread in the sample is 24.6% and represents Telia's bid for Sonera in March 2002, whereas the largest negative spread is -10.8% and corresponds to the offer made by Nordic Capital and Apax Partners for Capio AB in September 2006.[9] This broad range is not unique to our sample. Jindra and Walkling (2004) also report large dispersion in their data, documenting a range of arbitrage spreads between -30% and 42%.

Further, a brief inspection of the deal characteristics highlights some differences across advisor classifications, where the most notable discrepancies are in target sizes and bid premiums. The average target size for the entire sample is approximately EUR 487 million, and it is possible to notice that the targets tend to be larger in deals advised by top-tier investment banks or advisors of mixed tiers. Moreover, for the overall sample, the mean bid premium paid by acquiring firms in public takeovers is 33.2%. When considering the different rankings of advisors, bidding companies advised by lower-tier advisors pay lower premiums (30.3%) than acquirers hiring top-tier banks (36.5%), which is consistent with the findings of McLaughlin (1992).

[9] As explained in Section 2.1, a positive (negative) spread emerges when the market price of the target's stock trades above (below) the bid price.

Table 3
Sample Descriptive Statistics

The table presents descriptive statistics for our sample of Nordic public takeover bids announced from 1999 through 2019. Panel A reports summary statistics per year based on averages, while Panel B shows summary statistics for the different advisor classifications. The top-tier advisors are defined in Table 2, where we classify the top-8 banks as top-tier. Mixed advisors correspond to deals where bidders are advised by investment banks of different tiers, and lower-tier represents the advisors that are neither ranked as top-tier nor mixed.

Panel A: Data Descriptives by Year

Year Announced	No. of Bids	Arbitrage Spread	Size (EURm)	Bid Premium	Pre-Bid Run-Up	Toehold	Top-Tier Deals	Mixed Deals	Lower-Tier Deals
1999	14	1.7%	822.3	29.5%	23.3%	3.4%	21.5%	7.1%	71.5%
2000	15	2.9%	853.9	47.4%	11.7%	2.9%	53.3%	6.7%	40.0%
2001	9	2.2%	313.7	84.9%	19.9%	11.0%	11.1%	22.2%	66.7%
2002	4	9.0%	2935.0	25.4%	(15.0%)	0.0%	25.0%	25.0%	50.0%
2003	14	2.3%	275.1	31.6%	6.5%	12.8%	35.7%	7.1%	57.2%
2004	9	0.7%	358.7	29.1%	0.9%	10.1%	44.5%	11.1%	44.5%
2005	5	2.6%	935.8	29.2%	0.9%	9.1%	20.0%	40.0%	40.0%
2006	14	(0.2%)	558.2	28.1%	14.8%	4.3%	21.4%	35.7%	42.9%
2007	20	0.2%	372.6	27.2%	5.6%	7.1%	30.0%	20.0%	50.0%
2008	19	1.1%	229.9	37.3%	(8.8%)	10.8%	52.6%	5.3%	42.1%
2009	8	0.5%	60.3	20.2%	2.3%	9.3%	37.5%	25.0%	37.5%
2010	10	2.1%	249.2	30.0%	8.2%	6.5%	20.0%	20.0%	60.0%
2011	7	1.1%	197.0	36.8%	9.5%	15.7%	42.8%	28.6%	28.6%
2012	9	1.8%	119.3	31.0%	7.3%	9.8%	33.3%	0.0%	66.7%
2013	5	1.7%	338.0	19.4%	7.1%	12.5%	0.0%	20.0%	80.0%
2014	15	1.0%	441.5	33.2%	(4.7%)	7.3%	53.3%	6.7%	40.0%
2015	9	0.4%	424.1	32.0%	11.3%	11.7%	22.2%	33.3%	44.5%
2016	5	0.2%	176.3	43.6%	11.1%	4.9%	0.0%	20.0%	80.0%
2017	5	0.1%	124.0	11.5%	5.4%	5.3%	20.0%	0.0%	80.0%
2018	12	0.7%	839.2	21.8%	(1.3%)	9.5%	41.7%	16.6%	41.7%
2019	3	0.8%	1114.0	30.5%	0.1%	17.2%	0.0%	33.3%	66.7%
Total	211	1.3%	487.0	33.2%	5.9%	8.3%	32.7%	16.1%	51.2%

Table 3
Sample Descriptive Statistics (continued)

Panel B: Data Descriptives by Advisor Classification

	Overall Sample (1)		Top-Tier (2)		Mixed (3)		Lower-Tier (4)	
	Mean	N	Mean	N	Mean	N	Mean	N
Arbitrage Spread	1.3%	211	0.7%	69	1.0%	34	1.9%	108
Time to Resolution	75.0	211	68.7	69	80.6	34	77.3	108
Bid Revision	2.5%	211	4.5%	69	2.9%	34	1.1%	108
Deal Completion	84.8%	211	82.6%	69	91.2%	34	84.3%	108
Size	487.0	211	495.6	69	1331.8	34	215.5	108
Pre-Bid Run-Up	5.9%	211	2.9%	69	13.0%	34	5.6%	108
Bid Premium	33.2%	211	36.5%	69	35.3%	34	30.3%	108
Toehold	8.3%	211	8.0%	69	7.2%	34	8.8%	108
Hostile Bids	8.5%	211	8.7%	69	11.8%	34	7.4%	108
Tender Offers	90.0%	211	87.0%	69	91.2%	34	91.7%	108
Equity Deals	11.4%	211	10.1%	69	11.8%	34	12.0%	108
Cash Deals	88.6%	211	89.9%	69	88.2%	34	88.0%	108
Deals with Competition	5.7%	211	10.1%	69	11.8%	34	0.9%	108
No. of Advisors	1.4	211	1.1	69	2.3	34	1.2	108

4.5. Cross-Sectional Regressions

We examine the influence of a bidder's financial advisor on the time to resolution, the magnitude of a bid revision, and the the risk arbitrage spread by performing cross-sectional OLS regression analyses, while we investigate the impact on the probability of deal completion by running a probit model. This is consistent with Golubov et al. (2012), who conduct cross-sectional OLS regressions when analyzing continuous dependent variables, while performing probit regressions on dependent variables that are binary. Further, we run our OLS models with heteroskedasticity-robust standard errors due to the presence of repeat bidding firms in the sample (Golubov et al., 2012)[10]. Besides, we control for various deal characteristics that have been found to significantly impact risk arbitrage spreads in previous literature (Jindra & Walkling, 2004; Branch & Wang, 2008; Jetley & Ji, 2009). All variables used in our regression analyses are described in greater detail in Appendix 1.

To evaluate our first research hypothesis presented in Section 3, we test if the choice of a top-tier advisor has an impact on the probability of deal completion by running the probit regression model below:

$$Prob(Deal\ Completion_i = 1) = \varphi\left(\beta_0 + \beta_1 TopTier_i + \beta_2 Mixed_i + \beta_3 Ln(Size_i) + \beta_4 PreBidRunUp_i + \beta_5 BidPremium_i + \beta_6 Equity_i + \beta_7 Toehold_i + \beta_8 Hostile_i + \sum_{t=1999}^{2019} \beta_t Year_{i,t}\right) \quad \text{Equation (3)}$$

In Equation (3), the dependent variable (*Deal completion*$_i$) is a dummy that takes the value of one if the deal completes, and zero if the offer is withdrawn. Moreover, to test our second hypothesis and investigate whether a top-tier advisor impact the offer duration, we perform the following OLS regression:

$$Time\ to\ Resolution_i = \beta_0 + \beta_1 TopTier_i + \beta_2 Mixed_i + \beta_3 Ln(Size_i) + \beta_4 PreBidRunUp_i + \beta_5 BidPremium_i + \beta_6 Equity_i + \beta_7 Toehold_i + \beta_8 Hostile_i + \sum_{t=1999}^{2019} \beta_t Year_{i,t} + \varepsilon_i \quad \text{Equation (4)}$$

The dependent variable (*Time to Resolution*$_i$) in Equation (4) measures the number of calendar days between the announcement and the resolution of a public takeover bid. Furthermore, to explore if our third research hypothesis holds, we analyze whether there are differences in the

[10] To be consistent with the methodology used by Golubov et al. (2012), we do not perform our probit regression model with heteroskedasticity-robust standard errors.

magnitude of bid revisions for transactions being advised by top-tier and lower-tier advisors. The OLS model used for this exercise is defined as:

$$Magnitude\ of\ Bid\ Revision_i = \beta_0 + \beta_1 TopTier_i + \beta_2 Mixed_i + \beta_3 Ln(Size_i) + \beta_4 PreBidRunUp_i + \beta_5 BidPremium_i + \beta_6 Equity_i + \beta_7 Toehold_i + \beta_8 Hostile_i + \sum_{t=1999}^{2019} \beta_t Year_{i,t} + \varepsilon_i \quad \text{Equation (5)}$$

In Equation (5), the dependent variable measures the size of the price revision that materializes, which is computed as the percentage difference between the initial offer price and the final bid price. Lastly, to evaluate our main research hypothesis and to examine whether the bidder's choice of a top-tier M&A advisor has an impact on the risk arbitrage spread, we perform the following OLS regression:

$$Arbitrage\ Spread_i = \beta_0 + \beta_1 TopTier_i + \beta_2 Mixed_i + \beta_3 Ln(Size_i) + \beta_4 PreBidRunUp_i + \beta_5 BidPremium_i + \beta_6 Equity_i + \beta_7 Toehold_i + \beta_8 Hostile_i + \sum_{t=1999}^{2019} \beta_t Year_{i,t} + \varepsilon_i \quad \text{Equation (6)}$$

Arbitrage Spread$_i$ is the dependent variable in Equation (6) and represents the risk arbitrage spread one day after the offer announcement.

4.6. Robustness Test for Endogeneity Control

Our analysis is subject to the concern of endogeneity. We recognize that the advisor impact on deal outcomes could potentially be influenced by firms self-selecting their advisors, which may cause the regression estimates to be unreliable and biased (Heckman, 1979). In line with prior research (Kale et al., 2003; Golubov et al., 2012), we control for this in all our OLS regressions by employing the Heckman two-stage procedure.

In the Heckman correction, the first-stage equation models the choice of a top-tier advisor through a probit regression, while the second-stage equation corrects for the selection bias. It is common to include a variable in the first-stage equation that impacts the advisor selection, but not the outcome variable (Li & Prabhala, 2007).[11] In the spirit of Fang (2005) and Golubov et al. (2012), we construct the Scope indicator, taking the value of one if the bidding company has been advised by a top-tier bank in the past five years, and zero otherwise.

[11] The outcome variables in this paper are the time to resolution, the magnitude of a bid revision, and the risk arbitrage spread.

In our first-stage equations, we exclude the bid premium variable, as we argue that the premium paid by the acquirer is generally influenced by the investment bank, rather than being a criterion in the advisor selection process. We further construct inverse Mills ratios that are included as additional regressors in the second-stage equations. If the inverse Mills ratios show to be insignificant, a correct interpretation would suggest that our analysis does not suffer from self-selection bias, and hence the estimated coefficients from the OLS regressions should be considered as reliable.

However, since this procedure is unsatisfactory to use on probit models from a theoretical perspective (Freedman & Sekhon, 2010), we adopt an extension of the Heckman correction (Heckman probit model) for our regression analysis on the probability of deal completion. Similar to the inverse Mills ratios, if the Athrho variable is not statistically significant in the outcome equation, we can conclude that Equation (3) can be consistently estimated by a probit regression model. The Heckman two-stage procedure and the Heckman probit model are discussed more thoroughly in Appendix 13 and Appendix 14, respectively.

5. Empirical Results and Discussion

5.1. Financial Advisors and Deal Completion

We examine whether top-tier M&A advisors are more likely to complete deals compared to lower-tier banks. Similar to Golubov et al. (2012), we explore this by running a probit regression model, where the dependent variable takes the value of one if the transaction is completed, and zero if the deal is canceled. Our main variable of interest is the *top-tier* indicator, which takes the value of one if top-8 investment banks have solely advised an acquiring firm on a deal, and zero otherwise. Table 2 reports the ranking of investment banks and Table 4 illustrates the results from the regression.

The results show that there is no statistically significant effect from hiring top-tier advisors on the likelihood of deal completion. This conclusion also holds for bidding firms being advised by investment banks of mixed tiers. Albeit the coefficients not being significant in the regression, top-tier advisors are associated with a lower probability of completing deals, whereas mixed sets of advisors are coupled with a greater likelihood of deal completion. If the direction of these signs were to be significant, we believe that there could be two explanations for these diverging coefficients. First, as suggested by Kale et al. (2003), this might reflect that higher-ranked advisors are more probable to withdraw from value-destroying deals. Second, since mixed deals involve the largest number of advisors (see Table 3), this could also support the findings of Hunter and Jagtiani (2003). More precisely, they show that the deal certainty increases with the number of advisors hired by acquirers.

While not being the core focus of this paper, it is worth to mention the outcomes of the other control variables used in the regression. One of the most important predictors of takeover success is the deal nature. More specifically, *hostile deals* are less likely to be completed, which have also been documented in the papers of Hunter and Jagtiani (2003) and Golubov et al. (2012). Moreover, the indicators for the *bid premium* and the bidder *toehold* are positively correlated with the probability of deal completion and statistically significant at the 1% and 10% level, respectively. This is consistent with the interpretation that acquiring firms paying larger premiums or having higher initial holdings in the targets increase the likelihood of transactions going through. Out of the other control variables, we do not find the target *size*, *pre-bid run-up*, and *equity deals* to have significant effects on deal completion.

To summarize, our findings show that there are no statistically significant differences in deal completion across advisor classifications, and thus we cannot reject our first research hypothesis. The results are robust to controlling for endogeneity of advisor-firm matching. Similar studies that have been conducted on U.S. data are inconclusive. Consistent with our findings, Golubov et al. (2012) document no significant differences in deal completion between banks of different tiers. On the other hand, other papers report that higher-ranked banks are associated with a higher probability of completing M&A transactions. Rau (2000) attributes this to higher-ranked banks facing stronger deal completion incentives in their fee structures, while Hunter and Jagtiani (2003) assign their results to the general belief that top-tier advisors are more capable of achieving closure than lower-tier investment banks. However, while not carrying statistical significance in our regression, the coefficient of the *top-tier* variable is slightly negative, suggesting that higher-ranked advisors potentially could be worse at completing deals. A plausible explanation to this negative relationship may be that higher-ranked advisors have a greater probability to withdraw from value-destroying takeovers, albeit facing strong incentives to complete deals through contractual features (Kale et al., 2003). Hence, it is possible to question whether hiring top-tier banks solely as execution houses to ensure deal completion is a rational decision.

Table 4
Cross-Sectional Regression Analysis (Probit) of Deal Completion

This table reveals the results of the cross-sectional probit regression analysis of deal completion. The dependent variable is a dummy variable taking the value of one for successfully completed transactions, and zero otherwise. The regression controls for year fixed effects (coefficients suppressed), and since there is no variation in the dependent variable during some years, 22 transactions are omitted from the analysis. Variables used in the regressions are defined in Appendix 1. ***, **, * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. Z-statistics are shown in parentheses and N denotes the number of observations.

	Overall Sample (1)
Top-Tier	-0.070 (-0.230)
Mixed	0.684 (1.470)
Ln (Size)	-0.081 (-0.760)
Pre-Bid Run-Up	0.811 (0.920)
Bid Premium	2.096*** (2.930)
Equity Deals	0.382 (0.840)
Toehold	1.783* (1.650)
Hostile Deals	-1.368*** (-3.460)
Intercept	1.615* (1.840)
N	189
Pseudo R^2	0.2611
Year FE	Yes

5.2. Financial Advisors and Time to Resolution

This section explores if bidders employing top-tier M&A advisors impact the time to resolution. The analysis is carried out by running cross-sectional OLS regressions on the overall sample as well as for the subsamples of completed and lapsed deals. The dependent variable used in our regressions measures the number of calendar days between the announcement of a takeover bid and its resolution. The results are presented in Table 5. For the overall sample (column 1), the indicator for *top-tier* investment banks shows to be negatively related to the offer duration, with the effect being statistically significant at the 10% level. More specifically, deals where acquirers are advised by higher-ranked M&A advisors take on average 19 days less to resolve compared to transactions where bidding firms hire lower-tier banks. This is in line with the findings of Hunter and Jagtiani (2003) and Golubov et al. (2012). Similar to the *top-tier* indicator, the sign for the *mixed* variable is negative, but not significant at any conventional level.

When considering the effects of the other control variables, our findings are largely consistent with extant literature. *Equity deals* and transactions including targets of greater size take a longer time to complete, with the indicators being statistically significant at the 5% and 1% level, respectively. Similar findings on the effect of these two variables have been documented in the paper of Golubov et al. (2012). Further, the indicator for *hostile deals* is significant with a negative sign, suggesting that such transactions are associated with shorter deal durations.

In column (2) we present the results from repeating the OLS regression on the subsample of completed deals. Analyzing the time to resolution for successful takeovers has been the focus for many previous studies (e.g. Hunter & Jagtiani, 2003) since it is most interesting to investigate whether higher-ranked advisors are better at completing deals more quickly. The coefficient of the *top-tier* variable remains negative and gains in significance (to the 5% level), strengthening the interpretation of higher-ranked advisors being more capable of achieving closure faster. The conclusion from column (1) also remains unaltered for deals involving advisors of mixed tiers. Furthermore, column (3) presents the findings from the analysis conducted on the unsuccessful bids. Here the *top-tier* indicator is positive, but not significantly different from zero. In contrast, the *mixed* variable is statistically significant (at the 5% level), suggesting that deals involving advisors of different tiers should be associated with offer durations that are almost 39 days shorter than deals including lower-tier advisors.

Overall, the entirety of our data seems to support the notion of top-tier advisors being more capable of completing deals faster than lower-tier investment banks. Our results also remain robust when testing for the natural logarithmic transformation of time to resolution as the dependent variable and to controlling for the endogeneity of advisor-firm matching. This leads us to reject our second hypothesis presented in Section 3. Interestingly, when comparing our results to previous research conducted on U.S. data (Hunter & Jagtiani, 2003; Golubov et al., 2012), the impact of top-tier advisors on offer durations appears to be consistent. We believe that our findings can constitute evidence in favor of the notion that higher-ranked investment banks are superior to other financial advisors in terms of both skills and expertise. As a consequence, it may be of greater interest for higher-ranked banks to complete deals in shorter time frames rather than negotiating more favorable terms for the acquirer (Golubov et al., 2012). Another plausible explanation to our results is presented by Hunter and Jagtiani (2003). They claim that the size of fees mainly is important for motivating advisors to shorten the time to resolution, while not being equally important for driving the banks' effort to complete deals. This could ultimately explain why we observe that top-tier investment banks are associated with shorter offer durations but do not significantly impact the probability of deal completion.

Table 5
Cross-Sectional Regression Analysis (OLS) of Time to Resolution

The table reports the estimated coefficients of the cross-sectional OLS regression analysis of the time to resolution. The analysis is carried out by running separate regressions on the overall sample (1), as well as for the subsamples of completed bids (2) and withdrawn transactions (3). Consistent with Golubov et al. (2012), we run our regression models with heteroskedasticity-robust standard errors due to the presence of repeat acquirers (t-statistics are presented in parentheses) and do not control for year fixed effects in the analysis of the offer duration. Variables are described in Appendix 1. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. N denotes the number of observations.

	Overall Sample (1)	Completed Bids (2)	Withdrawn Bids (3)
Top-Tier	-18.767*	-23.313**	5.473
	(-1.790)	(-2.140)	(0.200)
Mixed	-15.210	-13.457	-38.837**
	(-1.140)	(-0.890)	(-2.110)
Ln (Size)	12.646***	12.145**	16.007*
	(2.940)	(2.550)	(1.980)
Pre-Bid Run-Up	-15.611	-13.762	-51.644
	(-0.700)	(-0.570)	(-0.760)
Bid Premium	2.132	7.878	-142.721**
	(0.230)	(0.810)	(-2.170)
Equity Deals	47.300**	39.508**	76.300
	(2.520)	(2.280)	(1.290)
Toehold	37.831	46.393	-47.749
	(1.060)	(1.160)	(-0.900)
Hostile Deals	-20.249*	-12.056	-59.526**
	(-1.900)	(-0.770)	(-2.200)
Intercept	14.140	14.781	35.856
	(0.900)	(0.820)	(1.210)
N	211	179	32
Adjusted R^2	0.152	0.138	0.480
Year FE	No	No	No

5.3. Financial Advisors and Magnitude of Bid Revisions

Whether a takeover bid where the bidding firm is advised by a top-tier advisor is subject to larger bid revisions is examined by performing a cross-sectional OLS regression. The dependent variable measures the magnitude of a bid revision as the ratio between the initial bid price and the final offer price. The results of the regression are presented in Table 6.

The indicator for *top-tier* advisors is positive, but not statistically significant at any conventional level. Conversely, bidders employing banks of mixed tiers do on average amend their prices by 3.8% more than acquiring companies hiring lower-tier advisors, with the effect being statistically significant at the 10% level. The different results could potentially be explained by mixed deals being associated with greater competition, which may increase the need for making price amendments to fend off competition. Besides, it is worth to notice that none of the other control variables used in the regression proves to be statistically significant. Nonetheless, given the relatively low explanatory power (R^2) of the model, it is plausible that there are other deal characteristics that are important for explaining variations in the dependent variable that we do not capture in our regression analysis.

Due to the lack of significance in our results, we cannot reject our third research hypothesis anticipating that there should be no differences in the magnitude of bid revisions between advisor classifications. This conclusion continues to hold when controlling for endogeneity of advisor-firm matching. However, if these results were to be significant, hiring top-tier banks would have a positive effect on the magnitude of bid revisions. This could indicate that higher-ranked banks are better at negotiating initial and future prices more accurately, which may result in more favorable terms for the acquirer. This argument is supported by the diligent advisor assertion presented by Golubov et al. (2012).

Table 6
Cross-Sectional Regression Analysis (OLS) of Magnitude of Bid Revisions

The table presents the outcomes of the cross-sectional OLS regression analysis of the magnitude of bid revisions. The dependent variable measures the revision ratio between the initial offer price and the final bid price. Consistent with Golubov et al. (2012), we run our regression models with heteroskedasticity-robust standard errors due to the presence of repeat acquirers (t-statistics are presented in parentheses). The regression controls for year fixed effects (coefficients suppressed) and the variables used in the analysis are defined in Appendix 1. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. N denotes the number of observations.

	Overall Sample (1)
Top-Tier	0.041 (1.640)
Mixed	0.038* (1.720)
Ln (Size)	-0.005 (-1.150)
Pre-Bid Run-Up	-0.016 (-0.450)
Bid Premium	0.017 (0.790)
Equity Deals	-0.009 (-0.950)
Toehold	0.056 (0.810)
Hostile Deals	0.016 (0.650)
Intercept	0.108 (1.260)
N	211
Adjusted R^2	0.118
Year FE	Yes

5.4. Financial Advisors and Risk Arbitrage Spreads

In this section we study the relationship between the ranking of the bidder's financial advisor and the risk arbitrage spread by conducting a cross-sectional OLS regression analysis. The dependent variable measures the spread as the percentage difference between the offer price and the target's share price one day after the takeover announcement. Our main variable of interest is the *top-tier* indicator, which takes the value of one if top-8 investment banks have solely advised an acquiring firm on a deal, and zero otherwise. Table 7 presents the results.

The regression outcomes show that the *top-tier* variable is negative and statistically significant at the 5% level, implying that bidding companies being advised by higher-ranked investment banks are associated with lower risk arbitrage spreads. More specifically, our findings suggest that deals involving higher-ranked M&A advisors should be coupled with spreads that are 1.1% lower than transactions advised by lower-tier banks. However, the indicator for *mixed* deals is close to zero, but not statistically significant at any conventional level. The discrepancy in the results between advisor classifications might suggest that it is difficult to isolate the effect of hiring a top-tier investment bank when the bidding firm employs advisors of different tiers. This further strengthens our argument about not classifying a deal as top-tier if it has been advised by banks of other tiers as well. The findings remain robust when testing for alternative advisor classifications and controlling for endogeneity.

Moreover, the interpretation of the other control variables is generally in line with existing research. The *bid premium* is positively correlated with arbitrage spreads, consistent with the findings of Jetley and Ji (2009). *Equity deals* are also associated with larger spreads, which is supported by the studies of Jindra and Walkling (2004) and Branch and Wang (2008). This is largely attributable to cash payments being associated with higher certainty in bid prices, as these are not dependent on the share prices of the acquiring firms. Both the indicators of the *bid premium* and *equity deals* are statistically significant at the 5% level, while none of the other control variables are significant at any conventional level.

The previously outlined results suggest that the bidder's choice of an M&A advisor is an important factor for explaining risk arbitrage spreads in public takeovers. Hence, our findings allow us to reject our fourth research hypothesis. As has been discussed throughout Section 5, it is important to understand the underlying mechanisms driving our results. The differential impact of top-tier advisors on spreads could be attributed to higher-ranked banks having a greater ability to achieve closure faster than lower-tier alternatives. This is consistent

with existing research conducted in the U.S., and thus it is reasonable to believe that the financial advisor's impact on offer outcomes does not differ despite, for example, differences in ownership structures. Similar to Golubov et al. (2012), we believe that the negative relationship between top-tier M&A advisors and the time to resolution could be interpreted as evidence of the superiority of higher-ranked banks as advisors in corporate takeovers. An alternative explanation to our results can be attributed to top-tier investment banks often being strongly incentivized by their fee structures to complete deals quickly (Hunter & Jagtiani, 2003). In case that fees form the main driver behind our results, higher-ranked advisors ability to complete deals more quickly could primarily be fuelled by the goal of maximizing their profits.

Besides, the significant difference in risk arbitrage spreads between advisor classifications can be attributed to some variables that characterize the deals that top-tier banks work on, but that nonetheless are excluded from our regression analyses. A good example could be the trading volume in the target firm's stock (Jetley & Ji, 2009). Although, the trading volume is greatly correlated with the size of the target company, which is an indicator that we control for in all of our regressions. Alternatively, as posited by Andries and Virlan (2017), an additional variable of interest may be rumors preceding a takeover bid. Nonetheless, the effect from rumors around an offer should most likely be captured by the pre-bid run-up in the target's share price, which is an effect that we control for.

Furthermore, introducing the importance of M&A advisors to arbitrage spreads can potentially have implications for trading strategies relating to risk arbitrage. Spreads form a key component to generate returns for risk arbitrageurs, and the findings throughout this paper is solely based on information that becomes publicly available on the announcement of a takeover bid. However, it is important to emphasize that risk arbitrage is an investment strategy that involves considerable amounts of risk (Fich & Stefanescu, 2003). From the findings of this paper, it is therefore difficult to conclude whether the negative relationship between top-tier advisors and arbitrage spreads could lead to excess returns. Conducting such a profitability analysis is beyond the scope of this paper and constitutes a potential area for future research.

Table 7
Cross-Sectional Regression Analysis (OLS) of Risk Arbitrage Spreads

The table shows the results of the cross-sectional OLS regression analysis of the risk arbitrage spread. The dependent variable measures the percentage difference between the offer price per share and the market price of the target firm's stock one day after the announcement. Consistent with Golubov et al. (2012), we run our regression with heteroskedasticity-robust standard errors due to the presence of repeat acquirers (t-statistics are presented in parentheses). The regression controls for year fixed effects (coefficients suppressed) and the variables used in the analysis are described in greater detail in Appendix 1. ***, **, * indicate the statistical significance at the 1%, 5%, and 10% level, respectively. N denotes the number of observations.

	Overall Sample (1)
Top-Tier	-0.011** (-2.370)
Mixed	-0.001 (-0.110)
Ln (Size)	-0.003 (-1.170)
Pre-Bid Run-Up	-0.021 (-1.500)
Bid Premium	0.015** (2.220)
Equity Deals	0.027** (2.490)
Toehold	-0.022 (-1.380)
Hostile Deals	-0.002 (-0.200)
Intercept	0.035** (2.080)
N	211
Adjusted R^2	0.2792
Year FE	Yes

6. Robustness Tests

6.1. Endogeneity Control

The first robustness test that we perform relates to our results being subject to the concern of endogeneity. If self-selection bias occurs, it would distort and produce unreliable estimates from the OLS regressions as highlighted by Heckman (1979). Hence, as described more thoroughly in Section 4.6, we implement the Heckman two-stage procedure in our OLS regressions of time to resolution, the magnitude of bid revisions, and the risk arbitrage spreads. In turn, to control for endogeneity in the probit regression analysis of deal completion, we use an extension of the Heckman correction (Heckman probit model). The results from these analyses are presented in Tables 8 and 9.

The *Scope* variable is positive and statistically significant at the 5% level for all of the regressions, which is consistent with both Fang (2005) and Golubov et al. (2012). A correct interpretation would be that the bidder's choice of employing a top-tier financial advisor is positively related to if an acquirer has been advised by a top-tier bank in the past five years. The first-stage equations also show that the choice of a higher-ranked advisor is positively related to the *size* of the target firm, whereas it is negatively related to the *pre-bid run-up* in a target's share price. In other words, the likelihood of hiring a higher-ranked advisor as a bidding company is greater for a deal involving a large target, while the probability is lower when the target experiences a large run-up in its stock price before a takeover announcement. This is consistent with the findings of Golubov et al. (2012). Moreover, the pseudo R^2s from the probit regressions in Table 8 and 9 show that our models can explain approximately 5.3% of the choice between a top-tier and lower-tier advisor.

From the first-stage equations in Table 8 (columns 1, 3, and 5), we compute *inverse Mills ratios* that are added as additional variables to the second-stage equations (columns 2, 4, and 6). Since the *inverse Mills ratios* are not statistically significant in any of our regressions, this indicates that our analyses do not suffer from self-selection bias. Thus, the coefficient estimates from the OLS regression models outlined in Tables 5, 6, and 7 can be considered as reliable. Similarly, we can conclude that the findings from the probit model presented in Table 4 are not biased as the *Athrho* variable in Table 9 is not significant at any conventional level.

Table 8
Heckman Two-Stage Procedure

The table presents the results of the Heckman two-stage procedure. The first column for each category refers to the first-stage selection equation estimated by a probit regression in which the top-tier indicator is the dependent variable. The second column is the second-stage equation where the dependent variable is time to resolution, magnitude of bid revisions, and risk arbitrage spreads, respectively. The variable *Scope* takes the value of one if the acquirer has been advised by a top-tier advisor in a public takeover with a Nordic target during the last five years, and zero otherwise. Further, the *inverse Mills ratio* corrects for the selection bias. The *bid premium* variable is left out of the first-stage equations since it is likely to be influenced by the financial advisor rather than being a decisive factor in the choice of an M&A advisor. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. All control variables are defined in Appendix 1 and N denotes the number of observations. We discuss the Heckman two-stage procedure in greater detail in Appendix 13.

	Time to Resolution		Magnitude of Bid Revisions		Risk Arbitrage Spreads	
	Selection (1)	Outcome (2)	Selection (3)	Outcome (4)	Selection (5)	Outcome (6)
Scope	0.687**		0.687**		0.687**	
	(2.130)		(2.130)		(2.130)	
Ln (Size)	0.116*	24.791**	0.116*	0.012	0.116*	0.000
	(1.820)	(2.510)	(1.820)	(0.620)	(1.820)	(-0.130)
Pre-Bid Run-Up	-1.008*	-178.986**	-1.008*	-0.001	-1.008*	-0.073**
	(-1.870)	(-2.010)	(-1.870)	(-0.010)	(-1.870)	(-2.270)
Bid Premium		1.029		0.015		0.029***
		(0.040)		(0.270)		(2.900)
Equity Deals	-0.191	42.469	-0.191	-0.054	-0.191	0.014
	(-0.640)	(1.320)	(-0.640)	(-0.830)	(-0.640)	(1.300)
Toehold	-0.261	-50.416	-0.261	0.086	-0.261	-0.021
	(-0.380)	(-0.700)	(-0.380)	(0.580)	(-0.380)	(-0.850)
Hostile Deals	-0.180	-36.356	-0.180	0.051	-0.180	-0.004
	(-0.530)	(-1.060)	(-0.530)	(0.740)	(-0.530)	(-0.360)
Inverse Mills Ratio		84.439		0.115		0.004
		(1.320)		(0.920)		(0.220)
Intercept	-0.994***	-142.831	-0.994***	-0.151	-0.994***	-0.004
	(-2.980)	(-1.310)	(-2.980)	(-0.700)	(-2.980)	(-0.100)
N	211	211	211	211	211	211
Pseudo R^2	0.053		0.053		0.053	
Year FE	No	No	No	No	No	No

Table 9
Heckman Probit Model

The table presents the results of the Heckman probit model. The first column refers to the selection equation in which the top-tier indicator is the dependent variable. The second column is the outcome equation where the dependent variable is deal completion. The variable *Scope* takes the value of one if the acquiring firm has been advised by a top-tier advisor in a public takeover with a Nordic target during the last five years, and zero otherwise. Further, the *Athrho* variable indicates if the regression suffers from selection bias. The *bid premium* indicator is left out of the first-stage equations since it is likely to be influenced by the financial advisor rather than being a decisive factor in the choice of an M&A advisor. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. All control variables are defined in Appendix 1 and N denotes the number of observations. We discuss the Heckman probit model in greater detail in Appendix 14.

	Selection (1)	Outcome (2)
Scope	0.692** (2.150)	
Ln (Size)	0.115* (1.900)	-0.408*** (-2.840)
Pre-Bid Run-Up	-1.007** (-2.180)	-1.463 (-0.960)
Bid Premium		2.372 (1.630)
Equity Deals	-0.192 (-0.630)	-0.585 (-1.180)
Toehold	-0.254 (-0.360)	0.449 (0.180)
Hostile Deals	-0.169 (-0.490)	-1.808** (-2.230)
Athrho		-0.383 (-0.690)
Intercept	-0.990*** (-3.180)	3.316 (3.900)
N	211	211
Pseudo R^2	0.053	
Year FE	No	No

6.2. Financial Advisor Classification

Since the results presented throughout this paper is dependent on the advisor classifications, our second robustness concern relates to the ranking of financial advisors. Therefore, we test for alternative ranking methods that have been used in prior research. First, we check the robustness of our findings by employing the approach used by Golubov et al. (2012), where we classify deals as top-tier if at least one of the advisors involved in the transaction is ranked among the top-8 investment banks. Second, we also test if our results remain firm when applying top-5 and top-10 cutoffs for the top-tier classification of advisors. The top-5 cutoff, in particular, has been commonly used in other papers exploring the relationship between M&A advisors and offer outcomes (e.g. Rau, 2000). Appendices 4 and 5 presents our regression results from applying the method used by Golubov et al. (2012), Appendices 6 and 7 report the outcomes when employing the top-5 cutoff, and Appendices 8 and 9 show the regression results from adopting the top-10 cutoff.

It becomes evident that using alternative classification methods leave our results largely unchanged in terms of both the directions of the variables and their significance. The *top-tier* variable remains statistically significant at the 5% level when considering the top-5 advisors, while it is significant at the 10% threshold using the top-10 cutoff and the top-8 method proposed by Golubov et al. (2012). Beyond variations in significance levels, the only difference that emerges is that the *top-tier* variable is positive and significantly related (at the 10% level) to the magnitude of bid revisions in Appendix 4. This provides the insight that when higher-ranked investment banks are hired as advisors in public takeovers, bidders do on average make greater price amendments. However, as identified in Section 5.3, this result is likely driven by deals involving advisors of mixed tiers, rather than transactions where acquiring firms are solely being advised by top-tier banks. Moreover, when considering the other control variables, most of the coefficients remain unchanged with regards to the directions and the significance levels.

Besides, our methodology for classifying financial advisors is largely inspired by the paper of Rau (2000). This approach assumes that all banks are ranked every year based on transaction value, and then are classified according to the average of their yearly ranking across 1999 and 2019. We test the robustness of this methodology by adopting the approach used by Golubov et al. (2012). They classify the advisors based on the accumulated transaction value for the entire sample period, and then treat the top-8 investment banks as top-tier. Nonetheless,

as presented in Appendix 10, using this ranking method does not alter our classification of the top-tier investment banks.

Further, it is possible that our results with regards to the financial advisor's impact on offer outcomes and risk arbitrage spreads could partly be attributed to the target's financial advisor. Hence, we construct two new variables, where the first indicator (*Top-Tier Target's Advisor*) takes the value of one if the target firm is advised by a top-tier advisor, and zero if the target is advised by a lower-tier investment bank. In turn, the second variable (*Mixed Target's Advisor*) takes the value of one if the target company is advised by banks of mixed tiers, and zero otherwise. As shown in Appendix 11 and Appendix 12, our findings remain robust to controlling for the target's financial advisor.

6.3. Additional Sensitivity Tests

Besides controlling for endogeneity and testing the robustness of our advisor ranking, we also adopt an alternative definition of the risk arbitrage spread. In Section 4.3, we define the spread as the percentage difference between the offer price and the target's closing price one day after the offer announcement. Branch and Wang (2008) argue that it is more appropriate to use the price two days after the offer announcement, as it may allow the market to fully absorb the information about the transaction. When analyzing the impact of a higher-ranked advisor on the arbitrage spread two days after the announcement, the sign for the *top-tier* indicator remains negative and increases in significance (to the 1% level), reinforcing the insight that the bidder's choice of a top-tier advisor is an important determinant of spreads. Further, we perform two additional sensitivity tests, which have been used in a study exploring an adjacent topic (Golubov et al., 2012). These include: i) controlling for outliers by winsorizing the spreads at the 1st and 99th or 5th and 95th percentiles; and ii) increasing the target size threshold from EUR 5 million to EUR 10 million. These additional sensitivity tests do not alter our findings presented in Section 5.

7. Conclusion

7.1. Concluding Remarks

This paper provides new evidence on the impact of acquirers' M&A advisors in public takeover bids by being the first study to explore the relationship between the choice of top-tier investment banks and arbitrage spreads. Previous research examining risk arbitrage propose that spreads should reflect the likelihood of deal completion, the magnitude of bid revisions, and deal durations. Related literature studying the importance of financial advisors in M&As shows that banks are largely responsible for the negotiation processes and therefore should exert significant influence on offer outcomes. More precisely, higher-ranked advisors employed by bidders should affect the probability of deal completion and the time to resolution. Building on these two fields of literature, we thus hypothesize that top-tier investment banks hired by acquiring firms have an impact on risk arbitrage spreads.

By studying a sample of 211 public takeover bids from 1999 through 2019 on Nordic equity markets, we find that higher-ranked advisors employed by bidding companies are associated with significantly lower risk arbitrage spreads. More specifically, deals advised by top-tier investment banks have spreads that are, on average, 1.1% lower than transactions advised by lower-tier banks. The differential impact of higher-ranked advisors can be attributed to them being more capable of completing deals in shorter time frames compared to lower-tier alternatives. The results would then confirm the interpretation in previous research, namely the top-tier advisors' superiority in terms of skills and expertise when advising on corporate takeovers. Moreover, the negative relationship between higher-ranked banks and offer durations could also be explained by these advisors often facing strong incentives in their fee structures to complete deals quickly. Thereby, it is plausible that the top-tier investment banks' ability to achieve closure faster also can be driven by the purpose of maximizing their profits. Further, it is relevant to mention that this relation between financial advisors and the time to resolution has been documented in several studies conducted on U.S. data, despite differences in e.g. ownership structures. Hence, it may be possible that our findings with regards to the advisor impact on arbitrage spreads could be transferable to other geographies where this relationship has been established.

It is also important to be aware of alternative explanations for our findings. More specifically, it is plausible that the significant difference in risk arbitrage spreads across advisor classifications can be attributed to some omitted variable that is important for explaining spreads and typical for the transactions that higher-ranked banks advise on. Although, we believe that we have indirectly accounted for such characteristics in our set of control variables, and hence we can conclude that the choice of a top-tier M&A advisor is important for determining offer outcomes and risk arbitrage spreads.

7.2. Limitations and Suggestions for Future Research

The results throughout this paper are based on the assumption that the ranking of M&A advisors should be in line with the industry convention of approximating it by the market shares of the investment banks. However, it is possible to contend this view by arguing that the past performance of the acquirers is a more appropriate proxy for advisor ranking than the market share is (Ismail, 2010; Bao & Edmans, 2011). Nonetheless, research shows that the prior performance of the clients affects the M&A advisors' market shares over time (Sibilkov & McConnell, 2014). Therefore, this is not considered to be a major concern in our thesis. What further may impede the credibility of our findings is the restriction to a relatively small sample of Nordic takeover bids. However, as similar conclusions have been drawn in studies conducted on more extensive data samples (e.g. Golubov et al., 2012), we find no reasons for questioning the validity of our results.

Moreover, there are numerous interesting topics for future research to explore with regard to the role of financial advisors in M&A transactions. As mentioned in Section 5, the first would be to examine whether different advisor classifications impact the profitability of an investment strategy based on the principles of risk arbitrage. Second, it would be valuable to get a better understanding for why top-tier advisors are associated with shorter offer durations. Theory suggests that this might be due the superiority of higher-ranked banks and them facing strong incentives to complete deals quicker, but alternative explanations may exist. Third, it would also be interesting to investigate if other advisor classifications could affect arbitrage spreads. One example could be to test for the differences between boutique advisors and full-service investment banks, as M&A boutiques have been shown to influence offer outcomes in a similar way as top-tier advisors (Song et al., 2013).

8. References

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9. Appendix

Appendix 1
Variable Definitions

Variable	Definition
	Panel A: Dependent Variables and Advisor Classifications
Risk Arbitrage Spread	The spread is computed as the percentage difference between the offer price per share and the market price of the target's stock one day after the announcement. This approach is consistent with prior research (Jindra & Walkling, 2004; Jetley & Ji, 2009; Andries & Virlan, 2017).
Deal Completion	Binary variable: Successfully completed transactions takes the value one, while unsuccessful offers are denominated by zero.
Time to Resolution	Measures the number of calendar days between the announcement of a public takeover and its resolution.
Bid Revision	Computed as the revision ratio between the final bid price and the initial offer price per share. For a deal where no price amendment is made, this variable is set to 0%.
Top-Tier	Dummy variable. Takes the value of one for transactions where bidders are solely advised by banks belonging to the top-8 investment banks. The top-8 financial advisors are J.P. Morgan, SEB, Goldman Sachs, Nordea, Morgan Stanley, Deutsche Bank, Carnegie Investment Bank, and UBS Investment Bank. The approach is inspired by the paper of Golubov et al. (2012).
Mixed	Dummy variable. Takes the value of one for transactions where acquirers are advised by M&A advisors of different tiers, and zero otherwise. This approach is also used by Song et al. (2013).
	Panel B: Deal Characteristics
Size	The target size is approximated by the deal value of the transaction received from Mergermarket in EUR million.
Pre-Bid Run-Up	Computed as the percentage share price increase in the target's stock from 42 days to 1 day before the announcement. This is in line with the approach used by Jindra and Walkling (2004).
Bid Premium	The bid premium is computed as the percentage difference between the offer price per share and the average market price of the target stock 10-30 days before the announcement of the takeover bid. This is consistent with Jindra and Walkling (2004).
Equity Deals	Binary variable. One for transactions involving payment in shares, zero for cash offers.
Toehold	Percentage ownership controlled by the acquirer in the target firm prior to the announcement of the takeover (as reported by Mergermarket).
Hostile Deals	Dummy variable. Takes the value of one for hostile bids, while being zero for friendly takeovers.
Scope	Binary variable. One if the bidder has been advised by a top-tier bank in the five years prior to the deal, and zero otherwise. Only used in the first-stage equations in the Heckman two-step procedure and in the selection equation of the Heckman probit model to control for the endogeneity of advisor-firm matching. A similar variable is constructed by Golubov et al. (2012).

Appendix 2
List of Nordic Public Takeover Bids Included in the Sample

The table shows our sample of public takeover bids on the Nordic equity markets that have been announced between 1999 and 2019. Our final sample does not cover any Icelandic transactions as these have not met our selection criteria. Data is downloaded from Mergermarket and S&P Capital IQ and is restricted to successful and unsuccessful public deals since measuring risk arbitrage spreads in private companies is not possible. The sample is then sorted by the selection criteria presented in Section 4.1.

Transaction No.	Date Announced	Date Completed	Date Withdrawn	Target Company	Target Company Industry	Target Country	Bidder Company	Bidder Financial Advisor	Deal Value (EURm)	Consideration Structure	Bid Revision	Arbitrage Spread
1	29/07/2019	07/10/2019		KappAhl AB	Consumer: Retail	SE	Mellby Gard AB	Erneholm Haskel	138	Cash		2.4%
2	24/04/2019	02/07/2019		Arkil Holding A/S	Construction	DK	Private investors	ABG Sundal Collier	63	Cash		1.3%
3	09/04/2019	26/09/2019		DNA Plc	Telecommunications: Carriers	FI	Telenor ASA	Barclays; SEB	3,141	Cash		(1.3%)
4	10/12/2018	15/02/2019		Pöyry Oyj	Services (other)	FI	AF AB	Access Partners; Handelsbanken Capital Markets; SEB	586	Cash		0.5%
5	22/11/2018	17/01/2019		Kotipizza Group Oyj	Consumer: Foods	FI	Orkla ASA	Carnegie Investment Bank	158	Cash		0.0%
6	04/10/2018	09/11/2018		A Group Of Retail Assets Sweden AB	Real Estate	SE	Klovern AB	Jones Lang LaSalle; Swedbank	80	Cash		0.7%
7	06/09/2018		09/10/2018	Skanska Energi AB	Energy	SE	Ancala Partners LLP	Nordea	69	Cash	20.0%	0.0%
8	27/09/2018	18/01/2019		Agromino A/S	Agriculture	DK	Private investor	Stockholm Corporate Finance	23	Cash		0.0%
9	10/09/2018	09/10/2018		House of Friends AB	Media	SE	Miltton Labs	Mangold Fondkommission	7	Cash		1.9%
10	13/06/2018		20/09/2018	Belships ASA	Transportation	NO	Private investors	Danske Bank	44	Cash		3.4%
11	04/06/2018	26/10/2018		Uniflex AB	Services (other)	SE	Poolia AB	SEB	29	Equity		1.3%
12	14/03/2018	30/05/2018		Swedol AB	Consumer: Retail	SE	Nordstjernan AB	SEB	207	Cash		(4.2%)
13	13/03/2018		09/05/2018	Nordjyske Bank A/S	Financial services	DK	Jyske Bank	Carnegie Investment Bank	288	Cash	11.8%	2.4%
14	08/03/2018		30/04/2018	Tecnotree Oyj	Computer software	FI	Private investor	Evli Bank	28	Cash		0.0%
15	12/02/2018	04/04/2018		TDC Group	Telecommunications: Carriers	DK	DK Telekommunikation A/S	Barclays; Macquarie Group; Nordea	8,551	Cash		1.9%
16	13/11/2017	09/01/2018		Solvang ASA	Transportation	NO	Unity Invest AS	Fearnley Securities	52	Cash	10.0%	(4.8%)
17	23/10/2017	01/12/2017		Avega Group AB	Computer services	SE	Tieto Corporation	Danske Bank	44	Cash		1.5%
18	24/08/2017	03/10/2017		Weifa ASA	Medical: Pharmaceuticals	NO	Karo Pharma AB	DNB Markets	168	Cash		0.6%
19	27/02/2017	17/05/2017		Vigmed Holding AB	Medical	SE	Greiner Bio-One International GmbH	EY	9	Cash	20.0%	4.2%
20	09/02/2017	29/03/2017		Comptel Corporation	Computer software	FI	Nokia Oyj	Nordea	347	Cash		(1.0%)
21	21/12/2016	13/03/2017		Transcom WorldWide AB	Services (other)	SE	Altor Equity Partners AB	Danske Bank; Nordea	236	Cash		(0.3%)
22	15/12/2016	30/01/2017		Matse Holding AB	Internet / ecommerce	SE	Axfood AB	ABG Sundal Collier; Grant Thornton	52	Cash		(0.6%)
23	03/11/2016		20/01/2017	Honkarakenne Oyj	Construction	FI	Sistema Finance	Evli Bank	8	Cash		(1.3%)
24	02/06/2016	31/08/2016		HAVFISK ASA	Consumer: Foods	NO	Leroy Seafood Group ASA	DNB Markets; Pareto Securities	440	Cash		1.7%
25	14/03/2016		29/06/2016	Fortnox AB	Computer software	SE	Visma AS	ABG Sundal Collier	146	Cash		1.7%
26	30/11/2015	17/02/2016		Proffice AB	Services (other)	SE	Randstad Nordic AB	EY; Handelsbanken Capital Markets	184	Cash		(1.2%)
27	30/11/2015	11/02/2016		Industrial & Financial Systems AB	Computer software	SE	EQT Partners AB	KPMG; Nordea	959	Cash		(2.0%)
28	02/11/2015	17/12/2015		Cybercom Group AB	Computer services	SE	Viltor AB	Carnegie Investment Bank	34	Cash		0.7%
29	15/07/2015	23/10/2015		yA Holding ASA	Financial services	NO	Resurs Bank AB	Fondsfinans	177	Cash		6.8%
30	03/07/2015		21/08/2015	Mols-Linien A/S	Transportation	DK	Polaris Private Equity	Danske Bank	158	Cash	17.6%	(2.6%)
31	15/05/2015	15/06/2015		Aerocrine AB	Medical	SE	Circassia Pharmaceuticals Plc	J.P. Morgan; Peel Hunt	171	Cash		3.7%
32	15/04/2015		27/07/2015	Nordic Service Partners Holding AB	Leisure	SE	Danske Koncept Restauranter Holding ApS	Pareto Securities	34	Cash		(2.7%)
33	10/02/2015	01/04/2015		Axis AB	Indusrial products and services	SE	Canon Inc	Lazard; SEB	2,060	Cash		0.0%
34	30/01/2015	13/03/2015		Aspiro AB	Computer software	SE	S. Carter Enterprises, LLC	SEB	40	Cash		1.0%
35	10/11/2014	19/03/2015		Vizrt Ltd	Computer software	NO	Nordic Capital	Carnegie Investment Bank	256	Cash		1.4%
36	29/10/2014	18/12/2014		DIBS Payment Services AB	Services (other)	SE	Nets Holding A/S	Carnegie Investment Bank	83	Cash		1.5%
37	29/10/2014	05/12/2014		Hurtigruten ASA	Transportation	NO	Silk Bidco AS	Carnegie Investment Bank	608	Cash		2.5%
38	12/09/2014	21/11/2014		Vacon Plc	Industrial: Electronics	FI	Danfoss A/S	Nordea	1,044	Cash		1.1%
39	09/06/2014	22/08/2014		Connecta AB	Services (other)	SE	Acando AB	Evli Bank	59	Equity		4.2%
40	16/05/2014	18/06/2014		Solvtrans ASA	Services (other)	NO	Oaktree Capital Management	Pareto Securities	167	Cash		1.2%
41	19/05/2014	20/06/2014		EMS Seven Seas ASA	Services (other)	NO	Supreme Group B.V.	ABG Sundal Collier	40	Cash		0.8%
42	12/05/2014	13/06/2014		BWG Homes ASA	Construction	SE	OBOS Nye Hjem AS	SEB	411	Cash		1.4%
43	06/05/2014	30/09/2014		Readsoft AB	Computer software	SE	Lexmark International Technology S.A.	Goldman Sachs; Grant Thornton	180	Cash	42.3%	0.9%
44	15/04/2014	18/04/2014		Rorvik Timber AB	Agriculture	SE	Gunvor Group Ltd	Carnegie Investment Bank	146	Cash		(2.0%)
45	14/04/2014	17/06/2014		Oral Hammaslaakarit Plc	Medical	FI	CapMan Plc	Deloitte	62	Cash		0.5%
46	01/04/2014	13/06/2014		Hedson Technologies International	Industrial products and services	SE	Mellby Gard AB	Erneholm Haskel	14	Cash		0.6%
47	21/03/2014		02/07/2014	Shelton Petroleum AB	Energy	SE	Petrogrand AB	Mangold Fondkommission	51	Cash		3.3%
48	14/02/2014	26/05/2014		Cision AB	Computer software	SE	GTCR, LLC	Deutsche Bank	131	Cash	17.3%	1.0%
49	06/02/2014	01/04/2014		Pohjola Bank Plc	Financial services	FI	OP Pohjola Group Central Cooperative	J.P. Morgan	3,371	Cash		(4.0%)
50	17/06/2013	27/07/2013		Trygga Hem Skandinavien AB	Industrial products and services	SE	Sector Alarm AB	EY	22	Cash		1.1%

Appendix 2
List of Nordic Public Takeover Bids Included in the Sample (continued)

Transaction No.	Date Announced	Date Completed	Date Withdrawn	Target Company	Target Company Industry	Target Country	Bidder Company	Bidder Financial Advisor	Deal Value (EURm)	Consideration Structure	Bid Revision	Arbitrage Spread
51	10/06/2013	20/12/2013		Fred Olsen Production AS	Energy	NO	Yinson Holdings Berhad	AmInvestment Bank; Arctic Securities; Maybank	181	Cash		1.6%
52	04/06/2013	31/07/2013		Isconova AB	Medical: Pharmaceuticals	SE	Novavax Inc	Grant Thornton; Pareto Securities	17	Equity		7.1%
53	20/02/2013	21/05/2013		Sigma AB	Computer services	SE	Danir AB	HDR Partners	58	Cash		0.0%
54	11/02/2013	16/08/2013		Hoganas AB	Industrial products and services	SE	Lindéngruppen AB; FAM Sweden AB	Erneholm Haskel; SEB	1,412	Cash	4.8%	(1.1%)
55	03/12/2012		23/01/2013	Note AB	Industrial: Electronics	SE	Lifco AB	Erneholm Haskel	33	Cash		4.6%
56	07/11/2012	01/03/2013		Rottneros AB	Manufacturing (other)	SE	Arctic Paper SA	Nordfirst Corporate Finance	26	Equity		3.9%
57	15/10/2012	26/11/2012		Avonova Sverige AB	Medical	SE	Stamina Hot Helse AS	Oaklins	19	Cash		2.4%
58	18/09/2012	14/11/2012		Sparbank A/S	Financial Services	DK	Spar Nord Bank A/S	Carnegie Investment Bank	46	Equity		5.0%
59	16/05/2012	26/07/2012		Brinova Fastigheter AB	Real Estate	SE	Backahill AB	Swedbank	562	Cash		0.2%
60	10/04/2012	18/06/2012		Thrane & Thrane A/S	Telecommunications: Hardware	DK	Cobham Plc	Bank of America; Danske Bank; Gleacher Shacklock	262	Cash	3.6%	(1.5%)
61	26/03/2012	04/06/2012		Jeeves Information Systems AB	Computer services	SE	Battery Ventures LP	RSM Tenon Group Plc	25	Cash		0.9%
62	15/03/2012	29/03/2012		Dan-Ejendomme Holding A/S	Real Estate	DK	PKA A/S	Nordea	82	Cash		0.0%
63	12/01/2012	06/03/2012		Aspiro AB	Computer software	SE	Schibsted ASA	Nordea	19	Cash		0.6%
64	19/12/2011	27/01/2012		Orc Group AB	Computer software	SE	Nordic Capital	SEB; Swedbank	224	Cash		(0.6%)
65	16/12/2011	01/03/2012		Kverneland Group	Industrial products and services	NO	Kubota Corporation	ABG Sundal Collier; Goldman Sachs	262	Cash		5.5%
66	21/11/2011		27/01/2012	Affitech A/S	Biotechnology	DK	Trans Nova Investments Limited	Handelsbanken Capital Markets	9	Cash		4.8%
67	22/06/2011	27/09/2011		ElektronikGruppen BK AB	Industrial: Electronics	SE	Kamic AB	ABG Sundal Collier	26	Cash		1.3%
68	16/05/2011		05/09/2011	Niscayah Group AB	Industrial products and services	SE	Securitas AB	SEB	763	Equity		(4.4%)
69	28/04/2011	30/05/2011		Tretti AB	Internet / ecommerce	SE	CDON Group AB	SEB	34	Cash		0.7%
70	22/03/2011	09/05/2011		Ignis ASA	Computer software	NO	Finisar Corporation	SEB	61	Cash		0.0%
71	13/12/2010	11/03/2011		Cardo AB	Industrial products and services	SE	Assa Abloy AB	SEB	1,245	Cash		0.4%
72	30/11/2010	23/12/2010		Biolin Scientific AB	Medical	SE	Ratos AB	ABG Sundal Collier	30	Cash		0.4%
73	17/09/2010	06/10/2011		Marine Farms ASA	Agriculture	NO	Morpol ASA	ABG Sundal Collier	135	Cash		0.0%
74	06/09/2010		18/10/2010	Munters AB	Industrial products and services	SE	Alfa Laval AB	SEB	686	Cash	10.3%	(4.6%)
75	03/06/2010	06/07/2010		Maconomy AS	Computer software	DK	Deltek, Inc.	Arma Partners; Nordea	52	Cash		1.5%
76	30/05/2010		09/06/2010	Unison Forsikring ASA	Financial services	NO	Protector Forsikring ASA	Arctic Securities; Carnegie Investment Bank	16	Cash		13.4%
77	06/05/2010	10/06/2010		Simrad Optronics ASA	Defence	NO	Rheinmetall AG	First Securities	79	Cash		1.6%
78	10/02/2010		15/04/2010	Tricorona AB	Financial services	SE	Opcon AB	Banque Invik	109	Equity		1.4%
79	25/01/2010	07/04/2010		Neonet AB	Financial services	SE	Orc Software AB	HDR Partners	124	Equity		6.9%
80	05/01/2010	12/03/2010		Ticket Travel Group AB	Leisure	SE	Braganza AS	E. Ohman J:or Fondkommission	16	Cash	8.6%	0.0%
81	30/11/2009	22/03/2010		Ledstiernan AB	Financial services	SE	Thuban AB	SEB	6	Cash		(0.8%)
82	05/11/2009	23/12/2009		Tamfelt Corp	Manufacturing (other)	FI	Metso Oyj	SEB	199	Equity		1.9%
83	15/10/2009	27/01/2010		Larox Corporation	Industrial products and services	FI	Outotec Oyj	Global M&A Partners; Nordea	126	Equity		0.1%
84	17/04/2009	19/05/2009		Carl Lamm Holding	Computer services	SE	Ricoh Company Ltd	Carnegie Investment Bank	63	Cash		0.9%
85	10/08/2009	19/11/2009		Talentum Oyj	Media	FI	Alma Media Oyj	Nordhaven Corporate Finance; SEB	58	Cash		(2.1%)
86	08/06/2009	10/07/2009		Norman ASA	Computer software	NO	FSN Capital	ABG Sundal Collier	6	Cash		(2.8%)
87	29/05/2009		22/06/2009	Unison Forsikring ASA	Financial services	NO	Sparebank 1 Skadeforsikring AS	Arctic Securities	18	Cash		4.5%
88	04/05/2009	23/06/2009		Otrum ASA	Media	NO	Oter Invest AS	Guardian Corporate; Handelsbanken Capital Markets	6	Cash		2.0%
89	09/12/2008	28/01/2009		Wayfinder Systems AB	Computer software	SE	Vodafone Group Plc	SEB	20	Cash		4.3%
90	15/10/2008	30/01/2009		Peab Industri AB	Construction	SE	Peab AB	Catella; Swedbank	573	Equity		4.5%
91	07/11/2008	23/12/2008		Komplett AS	Internet / ecommerce	NO	Canica Invest AS	Norden Investment Banking	56	Cash		2.0%
92	03/11/2008		08/12/2008	Q-MED AB	Biotechnology	SE	EQT Partners AB; Lyftet Holding BV	Deutsche Bank; Nordea	374	Cash		4.3%
93	31/10/2008	29/12/2008		Teleca AB	Computer services	SE	Symphony Technology Group LLC	Carnegie Investment Bank	37	Cash		2.2%
94	23/10/2008	17/12/2008		Rocla Oyj	Automotive	FI	Mitsubishi Caterpillar Forklift Europe BV	Citi	97	Cash		5.3%
95	30/09/2008	14/11/2008		Arena Personal AB	Services (other)	SE	NorgesInvestor	Glitnir Banki	16	Cash		5.9%
96	15/09/2008	15/10/2008		VMETRO ASA	Computer software	NO	Curtiss-Wright Corporation	SEB	52	Cash		2.2%
97	15/09/2008	15/10/2008		Forstaedernes Bank	Financial services	DK	Nykredit Realkredit AS	SEB	244	Cash		4.0%
98	09/09/2008	14/11/2008		Ocean Heavy Lift ASA	Transportation	NO	Spencer Energy AS	Nordea	196	Cash		(2.7%)
99	27/08/2008	16/01/2009		Brostrom AB	Transportation	SE	A.P. Moller - Maersk A/S	Citi; Nordea	776	Cash		1.3%
100	18/08/2008	12/09/2008		SuperOffice AS	Computer software	NO	SuperInvest AS	Arctic Securities	47	Cash		0.3%

Appendix 2
List of Nordic Public Takeover Bids Included in the Sample (continued)

Transaction No.	Date Announced	Date Completed	Date Withdrawn	Target Company	Target Company Industry	Target Country	Bidder Company	Bidder Financial Advisor	Deal Value (EURm)	Consideration Structure	Bid Revision	Arbitrage Spread
101	22/07/2008	20/08/2008		Gunnebo Industrier AB	Industrial products and services	SE	Segulah Advisor AB	Carnegie Investment Bank	250	Cash		2.2%
102	21/04/2008	03/07/2008		Profdoc ASA	Computer software	NO	CompuGroup Holding AG	SEB	81	Cash	33.3%	(2.9%)
103	28/03/2008		12/06/2008	Sigma AB	Computer services	SE	Askero Utveckling AB	Danske Bank; HDR Partners	82	Cash	8.7%	(4.2%)
104	20/03/2008		23/05/2008	TietoEnator Corporation	Computer services	FI	Nordic Capital	Morgan Stanley; Nordea	1,238	Cash		(3.1%)
105	19/02/2008	18/04/2008		XPonCard Group AB	Computer: Semiconductors	SE	Oberthur Technologies S.A.	Danske Bank; DC Advisory; Societe Generale	91	Cash		0.6%
106	01/02/2008	03/03/2008		Boss Media AB	Computer software	SE	GTECH Corporation; Medstroms AB	Carnegie Investment Bank	112	Cash	31.6%	(7.8%)
107	14/01/2008	18/03/2008		Human Care HC AB	Medical	SE	Garden Growth Capital LLC	Erik Penser Bank	25	Cash		2.0%
108	14/12/2007	18/01/2008		Gymgrossisten Nordic AB	Internet / ecommerce	SE	CDON AB	Nordea	21	Cash		1.2%
109	11/12/2007	11/01/2008		Gant Sweden AB	Consumer: Retail	SE	Maus Freres SA	Castlegreen Partners; Handelsbanken Capital Markets	553	Cash		(0.6%)
110	13/11/2007	14/03/2008		Securitas Direct AB	Industrial products and services	SE	EQT Partners AB; Säkl AB; MSAB; Latour	Citi, Nordea	859	Cash	5.8%	(2.3%)
111	22/10/2007	17/12/2007		Ark Travel AB	Leisure	SE	Carlson Wagonlit Travel Inc	E. Ohman J:or Fondkommission	26	Cash		2.3%
112	10/10/2007	02/11/2007		Mandator AB	Computer services	SE	Fujitsu Services PLC	Nordea	51	Cash		1.4%
113	25/09/2007		14/11/2007	Elverket Vallentuna AB	Energy	SE	E.ON Sverige AB	Handelsbanken Capital Markets	32	Cash		2.8%
114	27/08/2007	20/11/2007		Nefab AB	Manufacturing (other)	SE	Nordic Capital	PwC; SEB	136	Cash		1.6%
115	20/08/2007	08/10/2007		SalusAnsvar AB	Financial services	SE	DNB ASA	SEB	80	Cash		4.2%
116	13/08/2007		01/10/2007	Lindex AB	Consumer: Retail	SE	KappAhl AB	Carnegie Investment Bank	862	Cash		(0.7%)
117	30/07/2007		02/09/2008	Wavefield Inseis ASA	Energy	NO	TGS-NOPEC Geophysical Company ASA	Deutsche Bank	785	Equity		(2.2%)
118	29/06/2007	31/08/2007		Keops A/S	Real Estate	DK	Stodir hf	Glitnir Banki	586	Cash		1.3%
119	29/05/2007	10/07/2007		Expert ASA	Consumer: Retail	NO	A Wilhelmsen Capital AS	ABG Sundal Collier; DNB Markets; SEB	673	Cash		0.6%
120	24/05/2007	27/09/2007		Kemira GrowHow Oyj	Chemicals and materials	FI	Yara International ASA	Citi; Nordea	879	Cash		0.7%
121	22/05/2007	20/12/2007		eQ Corporation	Financial services	FI	Straumur-Burdaras Fjarfestingarbanki hf	ALMC	256	Cash		0.0%
122	26/03/2007	10/05/2007		Inwarehouse AB	Internet / ecommerce	SE	Komplett AS	ABG Sundal Collier	16	Cash		2.1%
123	08/03/2007	28/05/2007		Birka Line Oy AB	Transportation	FI	Eckero Line AB Oy	Danske Bank	162	Cash		(1.2%)
124	19/02/2007	16/04/2007		Sardus AB	Consumer: Foods	SE	Atria Meat & Fast Food AB	Nordhaven Corporate Finance	204	Cash		0.0%
125	05/02/2007	21/05/2007		FIM Group Corporation	Financial services	FI	Glitnir Banki hf	Glitnir Banki	341	Cash		(0.5%)
126	15/01/2007		15/03/2007	Tradedoubler AB	Media	SE	Time Warner Inc	Morgan Stanley	600	Cash		(7.1%)
127	15/01/2007	09/03/2007		Pergo AB	Construction	SE	Pfleiderer	ABN AMRO	330	Cash		1.0%
128	20/11/2006	22/01/2007		Protect Data AB	Computer software	SE	Check Point Software Technologies Ltd	Lehman Brothers; SEB	460	Cash	3.9%	(3.7%)
129	17/10/2006		06/12/2006	Polimoon ASA	Manufacturing (other)	NO	CapMan Plc	Carnegie Investment Bank; DNB Markets	251	Cash	18.2%	1.1%
130	02/10/2006		13/12/2006	Semcon AB	Services (other)	SE	JCE Group AB	Kaupthing Bank	126	Cash		(1.1%)
131	11/09/2006	09/10/2006		Narkes Elektriska AB	Industrial: Electronics	SE	Segulah Advisor AB	Carnegie Investment Bank; EY	128	Cash		1.0%
132	01/09/2006	31/10/2006		Capio AB	Medical	SE	Nordic Capital; Apax Partners	ABN AMRO; Deutsche Bank; PK Partners; Rothschild	2,473	Cash	9.2%	(10.8%)
133	20/06/2006	10/08/2006		Biacore International AB	Biotechnology	SE	GE Healthcare	UBS Investment Bank	352	Cash		0.8%
134	09/06/2006	06/07/2006		Active 24 ASA	Internet / ecommerce	NO	Mamut ASA	ABG Sundal Collier	16	Cash		3.2%
135	05/06/2006	04/08/2006		Netwise AB	Computer software	SE	Ericsson AB	Handelsbanken Capital Markets	34	Cash		1.3%
136	16/05/2006	22/06/2006		Allianse ASA	Computer services	NO	ErgoGroup AS	Handelsbanken Capital Markets	106	Cash		0.0%
137	12/04/2006	25/08/2006		NEMI Forsikring ASA	Financial services	NO	Tryggingamidstodin HF	ALMC; Carnegie Investment Bank	107	Cash		1.2%
138	03/04/2006	31/05/2006		Gambro AB	Medical	SE	Investor AB; EQT Partners AB	Goldman Sachs; Morgan Stanley; SEB	2,674	Cash	3.6%	0.9%
139	14/03/2006	18/05/2006		Stralfors AB	Computer services	SE	Posten Sverige AB	SEB	241	Cash		0.7%
140	13/03/2006	27/04/2006		Potagua FLS A/S	Industrial products and services	DK	FLSmidth & Co. A/S	Danske Bank	828	Equity		4.8%
141	09/01/2006	13/04/2006		Resco AB	Computer services	SE	AcandoFrontec AB	Avanza Corporate Finance	19	Cash		(2.8%)
142	22/11/2005	03/01/2006		OptiMail AB	Services (other)	SE	Norwegian Mail International	Handelsbanken Capital Markets	13	Cash		0.8%
143	02/06/2005	05/05/2006		Intentia International AB	Computer software	SE	Lawson Software Inc.	Lehman Brothers	349	Equity		10.0%
144	12/05/2005	07/10/2005		Riddarhyttan Resources AB	Mining	SE	Agnico-Eagle Mines Limited	Citi; Orion Securities; Pollitt & Co; SEB	98	Equity		(0.1%)
145	25/04/2005	17/06/2005		Privatbanken ASA	Financial services	NO	SEB	SEB	156	Cash		1.8%
146	29/03/2005	09/05/2005		ISS A/S	Services (other)	DK	EQT; Goldman Sachs Capital Partners	Citi; Goldman Sachs; SEB	4,063	Cash		0.6%
147	22/12/2004	05/04/2005		TurnIT AB	Computer: Hardware	SE	Nocom AB	Kaupthing Bank	27	Equity		10.7%
148	21/12/2004		01/02/2005	Alma Media Oyj	Media	FI	Schibsted ASA	Carnegie Investment Bank; ICECAPITAL Securities	793	Cash		(0.4%)
149	15/11/2004	18/02/2005		Finnveden AB	Automotive	SE	Nordic Capital	SEB	340	Cash		(0.3%)
150	15/11/2004	25/01/2005		Digital Illusions CE AB	Computer software	SE	Electronic Arts Inc.	Handelsbanken Capital Markets	23	Cash		(0.8%)

Appendix 2
List of Nordic Public Takeover Bids Included in the Sample (continued)

Transaction No.	Date Announced	Date Completed	Date Withdrawn	Target Company	Target Company Industry	Target Country	Bidder Company	Bidder Financial Advisor	Deal Value (EURm)	Consideration Structure	Bid Revision	Arbitrage Spread
151	08/11/2004	04/03/2005		Chips Group	Consumer: Foods	FI	Orkla ASA	Nordea	464	Cash		1.1%
152	14/09/2004	10/11/2004		Song Networks Holding AB	Telecommunications: Carriers	SE	TDC A/S	UBS Investment Bank	544	Cash	35.7%	(0.4%)
153	24/08/2004	29/09/2004		Frango AB	Computer software	SE	Cognos Inc	SEB	40	Cash		1.2%
154	28/06/2004	18/08/2004		Bostadsaktiebolaget Drott	Real Estate	SE	Stena AB	Handelsbanken Capital Markets	937	Cash		0.0%
155	26/04/2004	08/09/2004		Custos AB	Financial services	SE	Investment AB Oresund	Handelsbanken Capital Markets	60	Equity		(4.6%)
156	12/12/2003	04/03/2004		NEG Micon A/S	Energy	DK	Vestas Wind Systems A/S	Dresdner Kleinwort	613	Equity		2.8%
157	04/11/2003	16/01/2004		Pandox AB	Real Estate	SE	Eiendomsspar AS; Sundt AS	SEB	612	Cash	2.9%	0.0%
158	13/10/2003		02/12/2003	Hackman Oyj Abp	Consumer: Other	FI	Nordic Capital	SEB	274	Cash		1.1%
159	21/08/2003	16/10/2003		Eimo Oyj	Industrial: Electronics	FI	Foxconn Electronics, Inc.	Handelsbanken Capital Markets	112	Cash		2.0%
160	14/08/2003	19/01/2004		Graninge AB	Energy	SE	Sydkraft	Handelsbanken Capital Markets	1,140	Cash		0.5%
161	26/06/2003	28/08/2003		Perbio Science AB	Biotechnology	SE	Fisher Scientific International	J.P. Morgan; Lazard; Nordea	653	Cash	8.8%	(3.7%)
162	16/04/2003	09/06/2003		Sense Communications	Telecommunications: Carriers	NO	Reitangruppen A/S	ABG Sundal Collier	35	Cash	14.0%	7.0%
163	07/04/2003	26/05/2003		Biora AB	Medical	SE	Straumann Holding AG	Deutsche Bank	39	Cash		3.0%
164	20/03/2003		28/05/2003	Mandamus AB	Real Estate	SE	LRF Fastigheter AB	Swedbank	136	Cash		(2.9%)
165	17/02/2003	25/03/2003		Scandiaconsult AB	Services (other)	SE	Ramboll AS	Handelsbanken Capital Markets	90	Cash	2.2%	1.8%
166	13/02/2003	11/04/2003		Diffchamb	Consumer: Foods	SE	Raisio Group Plc	Danske Bank	17	Cash		3.7%
167	21/01/2003	31/03/2003		Allgon AB	Telecommunications: Hardware	SE	LGP Telecom Holding AB	SEB	89	Equity		8.9%
168	17/01/2003	20/03/2003		Oceanor Holdings ASA	Services (other)	NO	Fugro N.V.	First Securities	9	Cash		4.8%
169	09/01/2003	18/03/2003		Epsilon AB	Computer services	SE	Danir AB	SEB	33	Cash		2.8%
170	20/12/2002	21/02/2003		Nordlandsbanken ASA	Financial services	NO	DNB ASA	First Securities	143	Cash		4.5%
171	20/05/2002	21/08/2002		Partek Corporation	Industrial products and services	FI	Kone Oyj	Nordea; UBS Investment Bank	1,674	Cash		2.4%
172	26/03/2002	15/08/2002		Sonera Oyj	Telecomminications: Carriers	FI	Telia Company AB	Carnegie; Lazard; Merrill Lynch, UBS Investment Bank	9,914	Equity		24.3%
173	18/02/2002	11/04/2002		Intelligent Micro Systems Data AB	Computer hardware	SE	Martinsson Gruppen AB	HQ Bank	9	Cash		4.7%
174	21/06/2001	25/09/2001		Lundin Oil AB	Energy	SE	Talisman Energy Inc	Swedbank	426	Cash		3.0%
175	25/05/2001	02/08/2001		Jobline International AB	Servives (other)	SE	TMP Worldwide	Swedbank	128	Cash		4.2%
176	14/05/2001	18/06/2001		Lindab AB	Industrial products and services	SE	Lindab International AB	Carnegie Investment Bank	501	Cash		0.7%
177	23/04/2001	31/05/2001		Mosvold Shipping Ltd	Transportation	NO	Frontline Ltd	Fearnley Securities; SEB	45	Cash	4.5%	(0.2%)
178	11/04/2001	08/05/2001		Midtbank	Financial services	DK	Svenska Handelsbanken AB	Handelsbanken Capital Markets	283	Cash		1.8%
179	06/04/2001		14/06/2001	Platzer Fastigheter AB	Real Estate	SE	Fastighets AB Tornet	Catella	310	Equity		10.4%
180	21/03/2001	28/12/2001		Soon Communications Oyj	Telecommunications: Carriers	FI	Elisa Communications Corporation	Mandatum & Co	228	Equity		0.6%
181	12/03/2001	30/04/2001		Inwear Group A/S	Consumer: Other	DK	Carli Gry International A/S	ABN AMRO; Carnegie Investment Bank	88	Equity		(3.6%)
182	21/02/2001	10/04/2001		Sydkraft	Energy	SE	E.ON Nordic AB	Handelsbanken Capital Markets	814	Cash		2.9%
183	02/10/2000	08/11/2000		RealDanmark A/S	Financial services	DK	Danske Bank A/S	Morgan Stanley	3,600	Equity		2.5%
184	26/09/2000	15/11/2000		Anders Dios AB	Real Estate	SE	AP Fastigheter AB	Leimdorfer; MNB Maizels	224	Cash		2.0%
185	21/09/2000	17/11/2000		Bulten AB	Automotive	SE	Finnveden AB	Carnegie Investment Bank	100	Cash		0.0%
186	31/08/2000	28/09/2000		Hoffmann & Sonner	Construction	DK	Veidekke ASA	SEB	53	Cash		1.0%
187	16/08/2000	06/10/2000		IRO AB	Industrial products and services	SE	Vandewiele NV	ABN AMRO; Alfred Berg Asset Management	186	Cash		7.0%
188	21/08/2000	24/11/2000		Fastighetsaktiebolaget Norrporten AB	Real Estate	SE	NS Holding AB	SEB	183	Cash		2.6%
189	23/06/2000	10/08/2000		NetCom ASA	Telecommunications: Carriers	NO	Telia Company AB	Carnegie Investment Bank	2,751	Cash		1.3%
190	21/06/2000	11/09/2001		Svedala Industri AB	Telecommunications: Carriers	SE	Metso Oyj	Nordea; UBS Investment Bank	1,660	Cash		8.8%
191	15/06/2000	29/08/2000		Lifco AB	Medical	SE	Carl Bennet AB	Erneholm Haskel	37	Cash		4.5%
192	09/05/2000	20/06/2000		Folkebolagen AB	Services (other)	SE	Lindab AB	Catella	18	Cash		3.6%
193	05/05/2000		14/06/2000	Icopal A/S	Construction	DK	Trelleborg AB	Nordea	467	Cash	34.1%	(2.6%)
194	10/04/2000		28/09/2000	Perstorp Holding AB	Chemicals and materials	SE	IK Investment Partners Limited	Carnegie Investment Bank; SEB	1,158	Cash		(3.1%)
195	04/04/2000	16/06/2000		BT Industries AB	Automotive	SE	Toyoda Automatic Loom Works Ltd	Morgan Stanley; Swedbank	1,327	Cash		7.4%
196	09/02/2000	26/04/2000		Balder AB	Real Estate	SE	Drott AB	Alfred Berg Asset Management	397	Cash	3.7%	3.3%
197	27/01/2000	12/04/2000		Piren AB	Real Estate	SE	Rodamco Europe NV	Handelsbanken Capital Markets	648	Cash		4.9%
198	10/12/1999		22/12/1999	Selmer ASA	Construction	NO	NCC AB	Christiania Bank og Kreditkasse	245	Cash		2.3%
199	16/11/1999	14/02/2000		N&T Argonaut	Transportation	SE	Simbel Investment AB	Swedbank	198	Cash		3.2%
200	01/10/1999	22/11/1999		Suunto Oyj	Consumer: Other	FI	Amer Sports Oyj	Conventum Corporate Finance	48	Cash	15.0%	(6.5%)

Appendix 2
List of Nordic Public Takeover Bids Included in the Sample (continued)

Transaction No.	Date Announced	Date Completed	Date Withdrawn	Target Company	Target Company Industry	Target Country	Bidder Company	Bidder Financial Advisor	Deal Value (EURm)	Consideration Structure	Bid Revision	Arbitrage Spread
201	20/09/1999	18/12/2000		Christiania Bank of Kreditkasse ASA	Financial services	NO	MeritaNordbanken	Lazard; Pareto Securities	2,975	Cash	11.4%	6.3%
202	17/08/1999	27/10/1999		Aga AB	Chemicals and materials	SE	Linde AG	ABN AMRO; Deutsche Bank	3,524	Cash		0.4%
203	10/08/1999	22/09/1999		Eldon AB	Automotive	SE	EQT Partners AB	SEB	251	Cash		1.7%
204	25/05/1999	29/06/1999		Crisplant Industries A/S	Industrial products and services	DK	FKI Plc	Salomon Smith Barney	283	Cash		1.9%
205	03/05/1999	26/07/1999		Scancem AB	Construction	SE	Heidelberger	Dresdner Kleinwort Benson; ING	2,428	Cash		1.3%
206	29/04/1999	02/07/1999		BPA AB	Services (other)	SE	Procuritas AB; PEAB AB	SEB	208	Cash	100.0%	2.6%
207	27/04/1999	02/09/1999		ASG AB	Transportation	SE	Danzas Holding Ltd	Credit Suisse; Handelsbanken Capital Markets	373	Cash		1.5%
208	22/03/1999	28/04/1999		Iplast	Industrial products and services	NO	Mikron Holding AG	Corporate Development International; McDaniels	99	Cash		2.1%
209	09/03/1999	15/04/1999		Asticus AB	Real Estate	SE	IVG Immobilien AG	ABN AMRO; Hubner Schlösser & Cie	412	Cash		0.9%
210	01/03/1999	06/04/1999		PriFast AB	Real Estate	SE	Fastighets AB Balder	Handelsbanken Capital Markets	167	Cash		1.4%
211	11/02/1999	26/03/1999		Dahl International AB	Industrial products and services	SE	EQT Partners AB; Ratos AB	Carnegie Investment Bank	301	Cash	8.3%	4.3%

Appendix 3
Correlation Matrix

The matrix shows pairwise correlations of the variables used in this paper. The indicators are explained in detail in Appendix 1.

	Arbitrage Spread	Top-Tier	Mixed	Size	Pre-Bid Run-Up	Bid Premium	Equity Deals	Toehold	Hostile Deals	Deal Completion	Bid Revision	Time to Resolution	Scope
Arbitrage Spread	1												
Top-Tier	-0.1325	1											
Mixed	-0.036	-0.3055	1										
Size	-0.0636	0.1432	0.3154	1									
Pre-Bid Run-Up	-0.106	-0.108	0.1585	0.1528	1								
Bid Premium	0.1404	0.0675	0.0265	0.0291	0.1467	1							
Equity Deals	0.2728	-0.027	0.0054	0.0555	-0.056	-0.0357	1						
Toehold	-0.1446	-0.0147	-0.0344	-0.0802	-0.1922	-0.1782	-0.1452	1					
Hostile Deals	-0.015	0.0041	0.0507	0.0892	-0.0828	-0.104	-0.0025	-0.1213	1				
Deal Completion	0.0916	-0.0432	0.0775	0.0051	0.0925	0.1732	-0.015	0.0598	-0.3439	1			
Bid Revision	-0.1328	0.1506	0.0187	0.0389	-0.0057	0.0404	-0.0952	0.0395	0.0463	-0.0593	1		
Time to Resolution	0.106	-0.0688	0.0382	0.2514	-0.0199	-0.0119	0.2455	0.0462	-0.0738	0.0084	0.0018	1	
Scope	-0.0037	0.2042	0.1323	0.2571	-0.0635	0.1395	-0.0084	-0.0733	0.0817	0.0407	-0.0506	-0.0578	1

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Appendix 4
Cross-Sectional Regression Analyses Using Alternative Advisor Classification Methods (Golubov et al., 2012)

The table presents the results from the robustness test where we use the alternative advisor classification method proposed by Golubov et al. (2012). In contrast to us, they treat deals as top-tier if at least one top-8 advisor has advised the acquiring firm. The top-8 advisors classified as top-tier investment banks are shown in Appendix 10. The estimated coefficients and their Z-values from the cross-sectional probit regression is shown in column (1), while the results from the cross-sectional OLS regressions are revealed in column (2) and (3). As suggested by Golubov et al. (2012), the OLS regressions in the second column and the third column are performed with heteroskedasticity-robust standard errors due to the presence of repeat bidders (t-statistics are presented in parentheses). All regressions control for year fixed effects (coefficients suppressed). ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. Appendix 1 introduces the variables used in all regressions and N denotes the number of observations.

	Deal Completion	Magnitude of Bid Revisions	Risk Arbitrage Spreads
	(1)	(2)	(3)
Top-Tier	0.113	0.040*	-0.008*
	(0.380)	(1.850)	(-1.680)
Ln (Size)	-0.054	-0.005	-0.002
	(-0.510)	(-1.120)	(-0.980)
Pre-Bid Run-Up	0.799	-0.017	-0.019
	(0.920)	(-0.460)	(-1.380)
Bid Premium	2.079***	0.017	0.015**
	(2.940)	(0.800)	(2.260)
Equity Deals	0.296	-0.009	0.027**
	(0.660)	(-0.940)	(2.460)
Toehold	1.705	0.056	-0.021
	(1.600)	(0.810)	(-1.380)
Hostile Deals	-1.316***	0.016	-0.001
	(-3.400)	(0.650)	(-0.120)
Intercept	1.435	0.109	0.032
	(1.650)	(1.230)	(1.940)
N	189	211	211
Pseudo R^2 (Adj. R^2)	0.244	0.118	0.271
Year FE	Yes	Yes	Yes

Appendix 5
Cross-Sectional Regression Analysis (OLS) of Time to Resolution Using Alternative Advisor Classification Methods (Golubov et al., 2012)

Columns (1), (2) and (3) report the results from the cross-sectional OLS regression analyses of the time to resolution when employing the alternative advisor classification proposed by Golubov et al. (2012). The top-tier banks are defined in Appendix 10. The regressions are performed with heteroskedasticity-robust standard errors due to the presence of repeat acquirers (t-values are presented in parentheses). Variables are described in Appendix 1. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. N denotes the number of observations.

	Overall Sample (1)	Completed Bids (2)	Withdrawn Bids (3)
Top-Tier	-17.735* (-1.760)	-20.241* (-1.860)	-9.937 (-0.490)
Ln (Size)	12.771*** (3.120)	12.606*** (2.850)	19.292** (2.210)
Pre-Bid Run-Up	-14.670 (-0.640)	-10.278 (-0.420)	-41.259 (-0.640)
Bid Premium	2.045 (0.220)	7.585 (0.770)	-148.761** (-2.190)
Equity Deals	47.366** (2.540)	40.112** (2.300)	78.814 (1.310)
Toehold	38.040 (1.070)	47.333 (1.180)	-32.246 (-0.650)
Hostile Deals	-20.093* (-1.840)	-10.188 (-0.620)	-57.011** (-2.180)
Intercept	13.525 (0.920)	12.321 (0.760)	21.547 (0.730)
N	211	179	32
Adjusted R^2	0.152	0.135	0.451
Year FE	No	No	No

Appendix 6
Cross-Sectional Regression Analyses Using Alternative Advisor Classification Methods (Top-5 Cutoff)

This table shows the findings from the robustness test where we apply the top-5 cutoff when classifying advisors as top-tier. The top-5 threshold is a classification method that has been commonly used in prior research (e.g. Rau, 2000). Golubov et al. (2012) do also adopt this cutoff when testing the robustness of their main findings. The top-tier investment banks from using this approach are presented in Table 2. In column (1), the estimated coefficients and their Z-statistics from the cross-sectional probit regression analysis of deal completion are shown. The columns (2) and (3), in turn, report the outcomes from the cross-sectional OLS regression analyses. As suggested by Golubov et al. (2012), the OLS regressions in the second column and the third column are performed with heteroskedasticity-robust standard errors due to the presence of repeat bidders (t-statistics are presented in parentheses). All regressions control for year fixed effects (coefficients suppressed). ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. Appendix 1 introduces the variables used in all regressions and N denotes the number of observations.

	Deal Completion	Magnitude of Bid Revisions	Risk Arbitrage Spreads
	(1)	(2)	(3)
Top-Tier	0.162	0.033	-0.013**
	(0.460)	(1.040)	(-2.460)
Mixed	0.669	0.026	-0.006
	(1.340)	(1.020)	(-0.670)
Ln (Size)	-0.097	-0.002	-0.002
	(-0.920)	(-0.540)	(-1.060)
Pre-Bid Run-Up	0.725	-0.020	-0.018
	(0.820)	(-0.510)	(-1.290)
Bid Premium	1.974***	0.018	0.015**
	(2.790)	(0.810)	(2.290)
Equity Deals	0.357	-0.011	0.027**
	(0.780)	(-1.070)	(2.560)
Toehold	1.742	0.048	-0.019
	(1.600)	(0.750)	(-1.220)
Hostile Deals	-1.309***	0.016	-0.001
	(-3.380)	(0.660)	(-0.130)
Intercept	1.717*	0.102	0.033*
	(1.940)	(1.150)	(1.820)
N	189	211	211
Pseudo R^2 (Adj. R^2)	0.255	0.103	0.278
Year FE	Yes	Yes	Yes

Appendix 7
Cross-Sectional Regression Analysis (OLS) of Time to Resolution Using Alternative Advisor Classification Methods (Top-5 Cutoff)

This table reports the results from the cross-sectional OLS regression analysis of the time to resolution using the top-5 cutoff. The top-tier advisors are presented in in Table 2. The regression model outlined in Equation (4) is performed on the overall sample (1), as well as for the two subsamples of completed transactions (2) and lapsed deals (3). Consistent with Golubov et al. (2012), we run the regression models with heteroskedasticity-robust standard errors due to the presence of repeat acquirers (t-statistics are presented in parentheses) and do not control for year fixed effects in the analysis of the offer duration. Variables are described in Appendix 1. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. N denotes the number of observations.

	Overall Sample (1)	Completed Bids (2)	Withdrawn Bids (3)
Top-Tier	-21.687*** (-2.700)	-20.896** (-2.390)	-50.600 (-1.570)
Mixed	12.751 (0.770)	12.549 (0.710)	38.720 (1.450)
Ln (Size)	10.122*** (2.710)	9.645** (2.410)	20.129 (1.600)
Pre-Bid Run-Up	-17.111 (-0.710)	-14.212 (-0.540)	14.384 (0.240)
Bid Premium	1.091 (0.130)	6.645 (0.760)	-196.063** (-2.280)
Equity Deals	49.619*** (2.740)	41.975** (2.430)	78.511 (1.550)
Toehold	40.689 (1.130)	49.971 (1.220)	-54.928 (-0.870)
Hostile Deals	-19.380* (-1.770)	-9.514 (-0.590)	-59.533** (-2.450)
Intercept	20.632 (1.460)	19.552 (1.240)	31.678 (0.850)
N	211	179	32
Adjusted R^2	0.162	0.138	0.547
Year FE	No	No	No

Appendix 8
Cross-Sectional Regression Analyses Using Alternative Advisor Classification Methods (Top-10 Cutoff)

The table reveals the findings from the robustness test where we employ the top-10 cutoff when ranking advisors as top-tier. Golubov et al. (2012) adopt the top-10 advisor classification when testing the robustness of their main findings. The top-tier investment banks from using this approach are presented in in Table 2. In column (1), the estimated coefficients and their Z-statistics from the cross-sectional probit regression analysis of deal completion are shown. The columns (2) and (3), in turn, report the outcomes from the cross-sectional OLS regression analyses. As suggested by Golubov et al. (2012), the OLS regressions in the second column and the third column are performed with heteroskedasticity-robust standard errors due to the presence of repeat bidders (t-statistics are presented in parentheses). All regressions control for year fixed effects (coefficients suppressed). ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. Appendix 1 introduces the variables used in all regressions and N denotes the number of observations.

	Deal Completion	Magnitude of Bid Revisions	Risk Arbitrage Spreads
	(1)	(2)	(3)
Top-Tier	0.021	0.029	-0.010*
	(0.070)	(1.510)	(-1.840)
Mixed	0.697	0.029	0.002
	(1.510)	(1.520)	(0.250)
Ln (Size)	-0.083	-0.003	-0.003
	(-0.800)	(-0.850)	(-1.380)
Pre-Bid Run-Up	0.824	-0.016	-0.021
	(0.940)	(-0.450)	(-1.520)
Bid Premium	2.126***	0.020	0.014**
	(2.990)	(0.910)	(2.100)
Equity Deals	0.381	-0.008	0.027**
	(0.840)	(-0.810)	(2.470)
Toehold	1.785*	0.046	-0.018
	(1.660)	(0.710)	(-1.150)
Hostile Deals	-1.306***	0.018	-0.002
	(-3.350)	(0.720)	(-0.180)
Intercept	1.554*	0.094	0.038
	(1.800)	(1.160)	(2.300)
N	189	211	211
Pseudo R^2 (Adj. R^2)	0.260	0.101	0.279
Year FE	Yes	Yes	Yes

Appendix 9
Cross-Sectional Regression Analysis (OLS) of Time to Resolution Using Alternative Advisor Classification Methods (Top-10 Cutoff)

This table reports the results from the cross-sectional OLS regression analysis of the time to resolution using the top-10 cutoff. The top-tier advisors are presented in in Table 2. The regression model outlined in Equation (4) is performed on the overall sample (1), as well as for the two subsamples of completed transactions (2) and lapsed deals (3). Consistent with Golubov et al. (2012), we run the regression models with heteroskedasticity-robust standard errors due to the presence of repeat acquirers (t-statistics are presented in parentheses) and do not control for year fixed effects in the analysis of the offer duration. Variables are described in Appendix 1. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. N denotes the number of observations.

	Overall Sample (1)	Completed Bids (2)	Withdrawn Bids (3)
Top-Tier	-18.526** (-2.060)	-23.376** (-2.420)	5.529 (0.280)
Mixed	-1.151 (-0.090)	1.753 (0.120)	-38.821** (-2.250)
Ln (Size)	11.681*** (3.250)	11.171*** (2.830)	16.318 (2.060)
Pre-Bid Run-Up	-16.895 (-0.750)	-16.042 (-0.670)	-52.719 (-0.760)
Bid Premium	2.067 (0.240)	7.968 (0.880)	-142.711** (-2.080)
Equity Deals	47.041** (2.520)	38.602** (2.230)	76.098 (1.300)
Toehold	44.726 (1.240)	53.206 (1.310)	-51.951 (-0.860)
Hostile Deals	-20.973** (-1.980)	-13.082 (-0.860)	-59.514** (-2.210)
Intercept	17.724 (1.250)	18.623 (1.180)	34.248 (1.230)
N	211	179	32
Adjusted R^2	0.154	0.145	0.480
Year FE	No	No	No

Appendix 10
Financial Advisor Classification by Transaction Value (Top 30)

The table reveals the financial advisor ranking based on the approach proposed by Golubov et al. (2012), where investment banks are classified according to the total transaction value (EURm) on which they have advised on for a sample of public takeover bids in the Nordics between 1999 and 2019. The table also presents the number of transactions the M&A advisors have advised on throughout the entire period (1999-2019). Noticeably, the top-tier banks that comes out from this ranking are the same as in Table 2 where we employ the methodology used by Rau (2000).

Rank	Financial Advisor	Transaction Value (EURm)	Number of Deals
	Top-Tier		
1	J.P. Morgan	123,844	70
2	Goldman Sachs	113,087	66
3	SEB	112,906	239
4	Morgan Stanley	93,764	73
5	Nordea	93,760	164
6	Deutsche Bank	88,762	58
7	UBS Investment Bank	81,714	56
8	Carnegie Investment Bank	73,911	187
	Non-Top-Tier (shown from Top 9th to Top 30th)		
9	Lazard	69,529	53
10	Handelsbanken Capital Markets	64,422	149
11	Citi	50,415	45
12	Bank of America	37,939	30
13	Credit Suisse	37,316	32
14	Merrill Lynch	34,776	22
15	Rothschild & Co.	34,069	51
16	ABG Sundal Collier	27,379	114
17	Pareto Securities	26,272	97
18	Barclays	25,278	18
19	Royal Bank of Scotland	23,346	12
20	Lenner & Partners	21,309	16
21	ABN AMRO*	21,212	40
22	Greenhill & Co.	19,822	5
23	Danske Bank	19,572	120
24	DNB Markets	18,044	74
25	Lehman Brothers	17,833	15
26	HSBC	17,438	11
27	PwC	17,405	254
28	Arctic Securities	16,958	59
29	Swedbank	14,213	50
30	Macquarie Group Limited	12,854	17

*Pre 2009

Appendix 11
Cross-Sectional Regression Analyses Controlling for Target Advisor

The table presents the results from the robustness test where we control for the target's financial advisor. The top-tier investment banks are presented in in Table 2. In column (1), the estimated coefficients and their Z-statistics from the cross-sectional probit regression analysis of deal completion are shown. The columns (2) and (3), in turn, report the outcomes from the cross-sectional OLS regression analyses. As suggested by Golubov et al. (2012), the OLS regressions in the second column and the third column are performed with heteroskedasticity-robust standard errors due to the presence of repeat bidders (t-statistics are presented in parentheses). All regressions control for year fixed effects (coefficients suppressed). ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. Appendix 1 introduces the variables used in all regressions and N denotes the number of observations.

	Deal Completion (1)	Magnitude of Bid Revisions (2)	Risk Arbitrage Spreads (3)
Top-Tier (Bidder's Advisor)	-0.083	0.041	-0.011**
	(-0.270)	(1.640)	(-2.370)
Mixed (Bidder's Advisor)	0.764	0.038*	-0.003
	(1.580)	(1.750)	(-0.290)
Top-Tier (Target's Advisor)	-0.054	-0.028	-0.009
	(-0.150)	(-1.810)	(-1.380)
Mixed (Target's Advisor)	-0.612	-0.032**	0.015
	(-1.110)	(-2.230)	(1.200)
Ln (Size)	-0.045	-0.001	-0.002
	(-0.390)	(-0.340)	(-1.170)
Pre-Bid Run-Up	0.779	-0.022	-0.022
	(0.890)	(-0.580)	(-1.580)
Bid Premium	2.217***	0.016	0.014**
	(3.000)	(0.730)	(2.030)
Equity Deals	0.437	-0.008	0.026**
	(0.930)	(-0.840)	(2.430)
Toehold	1.769	0.046	-0.023
	(1.610)	(0.690)	(-1.460)
Hostile Deals	-1.370***	0.015	-0.003
	(-3.430)	(0.600)	(-0.330)
Intercept	1.409	0.098	0.038***
	(1.560)	(1.140)	(2.350)
N	189	211	211
Pseudo R^2 (Adj. R^2)	0.268	0.131	0.300
Year FE	Yes	Yes	Yes

Appendix 12
Cross-Sectional Regression Analysis (OLS) of Time to Resolution Controlling for Target Advisor

This table shows the findings from the cross-sectional OLS regression analysis of the time to resolution when we control for the target's financial advisor. The regression model outlined in Equation (4) is performed on the overall sample (1), as well as for the two subsamples of completed transactions (2) and lapsed deals (3). Consistent with Golubov et al. (2012), we run the regression models with heteroskedasticity-robust standard errors due to the presence of repeat acquirers (t-statistics are presented in parentheses) and do not control for year fixed effects in the analysis of the offer duration. Variables are described in Appendix 1. ***, **, and * indicate the statistical significance level at the 1%, 5%, and 10% level, respectively. N denotes the number of observations.

	Overall Sample (1)	Completed Bids (2)	Withdrawn Bids (3)
Top-Tier (Bidder's Advisor)	-18.587*	-23.836**	-10.698
	(-1.750)	(-2.190)	(-0.480)
Mixed (Bidder's Advisor)	-16.838	-16.557	-21.450
	(-1.200)	(-1.030)	(-0.960)
Top-Tier (Target's Advisor)	-2.505	-14.130	69.493*
	(-0.200)	(-1.140)	(1.770)
Mixed (Target's Advisor)	13.437	20.909	-7.304
	(0.490)	(0.570)	(-0.150)
Ln (Size)	12.355***	12.396**	8.421
	(2.730)	(2.550)	(1.230)
Pre-Bid Run-Up	-15.220	-12.674	19.498
	(-0.690)	(-0.550)	(0.320)
Bid Premium	1.643	6.593	-149.522*
	(0.180)	(0.680)	(-2.050)
Equity Deals	46.637**	40.034**	86.992
	(2.410)	(2.280)	(1.330)
Toehold	37.601	44.554	-6.649
	(1.060)	(1.120)	(-0.110)
Hostile Deals	-20.678*	-13.962	-50.131**
	(-1.860)	(-0.840)	(-2.310)
Intercept	15.558	16.048	59.041*
	(1.000)	(0.950)	(2.070)
N	211	179	32
Adjusted R^2	0.155	0.152	0.585
Year FE	No	No	No

Appendix 13
Endogeneity Control: Heckman Two-Stage Procedure

Presume an OLS regression model defined in the following way:

$$y_i = X_i'\beta + yTopTier_i + u_i, \quad \text{Equation (7)}$$

where X_i' represents a vector including deal characteristics, $TopTier_i$ is a binary indicator for top-tier M&A advisors and u_i is the error term of model. This model assumes that $TopTier_i$ is exogenous for the OLS estimates to be reliable. In case that the indicator $TopTier_i$ is endogenous instead, then the results from the OLS regression model is biased and cannot be estimated correctly. To control for endogeneity, Heckman (1979) posits a two-step procedure, where the first-stage selection equation is estimated by a probit model:

$$TopTier_i = Z_i'\delta + \varepsilon_i, \quad \text{Equation (8)}$$

Z_i' is a vector of elements influencing the advisor choice (top-tier vs. non-top-tier), while ε_i is the error term. Since the indicator of advisor reputation is a dummy variable, we have,

$$TopTier_i = 1 \; if \; f \; Z_i'\delta + \varepsilon_i > 0 \text{ and } TopTier_i = 0 \; if \; f \; Z_i'\delta + \varepsilon_i \leq 0 \quad \text{Equation (9)}$$

When the two error terms u_i and ε_i are correlated, the OLS regression model is suffering from selection-bias. Nonetheless, if Equation (7) is exchanged by:

$$y_i = X_i'\beta + \omega\frac{\varphi(z_i'\delta)}{\phi(z_i'\delta)}TopTier_i + \omega\frac{-\varphi(z_i'\delta)}{1-\phi(z_i'\delta)}(1 - TopTier_i) + v_i, \quad \text{Equation (10)}$$

where φ (.) and ϕ (.) are the probability density function (PDF) and the cumulative distribution function (CDF) of a normal distribution, respectively, the Equation (10) can consistently be estimated by an OLS regression model. The coefficient ω, in turn, determine the impact of a top-tier advisor on the dependent variable, while the additional regressors $\frac{\varphi(z_i'\delta)}{\phi(z_i'\delta)}$ and $\frac{-\varphi(z_i'\delta)}{1-\phi(z_i'\delta)}$ referred to as inverse Mills ratios. The Heckman correction has been used in previous studies conducted by Fang (2005) and Golubov et al. (2012).

Appendix 14
Endogeneity Control: Heckman Probit Model

Van de Ven and Van Pragg (1981) explains the Heckman probit model. The probit equation can be formulated as:

$$y_j = (\, x_j\beta + \, \mu_{1j} \, > 0) \qquad \text{Equation (11)}$$

While the selection equation can be defined as:

$$z_j\gamma \, + \, \mu_{2j} \, > 0 \qquad \text{Equation (12)}$$

where:

$$\mu_1 \sim N(0,1)$$
$$\mu_2 \sim N(0,1)$$
$$corr(\, \mu_1, \, \mu_2) \, = \rho$$

The log likelihood is :

$$\begin{aligned} lnL = & \sum_{j \in S} w_j \, ln \left\{ \varphi_2 \Big(\, x_j\beta + \, offset_j^{\beta}, \, z_j\gamma + \, offset_j^{\gamma}, \rho \Big) \right\} \\ & + \sum_{\substack{j \in S \\ y_{j \neq 0}}} w_j \, ln \left\{ \varphi_2 \Big(- x_j\beta + \, offset_j^{\beta}, \, z_j\gamma + \, offset_j^{\gamma}, -\rho \Big) \right\} \\ & + \sum_{\substack{j \in S \\ y_{j=0}}} w_j \, ln \left\{ 1 - \varphi \big(\, z_j\gamma + \, offset_j^{\gamma} \big) \right\} \end{aligned} \qquad \text{Equation (13)}$$

S corresponds to the observations for which the dependent varaible (y_j) is observed, $\varphi_2(.)$ corresponds to the cumulative bivariate normal distribution function, $\varphi(.)$ is the standard cumulative normal, and w_j is the weight for observation *j*.

For the maximum likelihood estimation, atanh ρ is estimated as:

$$atanh \, \rho \, = \frac{1}{2} ln \left(\frac{1 + \rho}{1 - \rho} \right) \qquad \text{Equation (14)}$$

If ρ = 0, the log likelihood for the probit model with sample selection equals the sum of the probit model for the outcome *y* and the selection model.