Stockholm School of Economics

Master Thesis

Department of Finance

The influence of M&A advisors on pre-bid run-ups

A quantitative study of 225 Swedish public takeover bids between 1999 and 2017

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Abstract

Prior to public takeover bids there is generally an abnormal stock price increase in the target firm's stock price, referred to as a pre-bid run-up. Prior research has emphasised two explanations for pre-bid run-ups. One argues the market can anticipate the impending takeover bid based on public information, and the other argues the pre-bid run-up is attributable to illegal exploitation of insider information. In this study, we assess the magnitude of pre-bid run-ups on the Swedish equity markets between 1999 and 2017 and examine if the magnitude is influenced by the size of the corporate network of the bidder's M&A advisor. We find an average pre-bid run-up of 7.6% and a total abnormal return of 31.9% including the return on announcement day, indicating that 24.0% of the total abnormal return associated with the takeover bid occurs prior to public announcement. Further, we find that the magnitude of pre-bid run-ups increases significantly when the bidder in the takeover hires an M&A advisor with a large corporate network. We attribute this impact to the increased risk of insider information leakage resulting from having a large corporate network. This implies that the importance of information leakage in the assessment of pre-bid run-ups cannot be ruled out.

Acknowledgements

We want to show our sincerest appreciation to everyone who helped us to conduct and finalise this study. A special thank you is directed to Alexander Ljungqvist, who acted as vital support through supervising us during the process of writing this paper. Any errors are our own.

Supervisor: Alexander Ljungqvist

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Keywords: Abnormal Returns, Insider Information Leakage, M&A Advisors, Pre-bid Run-ups

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Table of contents

I. Introduction....4
II. Theoretical framework....6
A. Introduction to pre-bid run-ups....6
B. The insider trading information leakage hypothesis....6
C. The market anticipation hypothesis....8
D. Assessment of empirical evidence....10
E. M&A advisors and private information....10
III. Research hypotheses....13
IV. Data and methodology....15
A. Data collection and management....15
B. Event study methodology....17
C. Estimation of abnormal returns....18
D. CAAR per M&A advisor....20
E. Robustness tests for pre-bid run-ups....25
F. Robustness test for pre-bid run-ups per M&A advisor....26
V. Results and discussion....28
A. Pre-bid run-ups....28
B. Pre-bid run-ups per M&A advisor....31
VI. Robustness tests....37
A. Pre-bid run-ups....37
B. Pre-bid run-ups per M&A advisor....37
VII. Conclusions....39
A. Conclusions from the study....39
B. Limitations and suggestions for future research....40
VIII. References....42
IX. Appendix....44
A. Appendix I: List of takeover bids in the sample....44
B. Appendix II: CAAR development during the event window....48
C. Appendix III: Summary statistics per M&A advisor....49
D. Appendix IV: CAAR for the *Large* and *Non-Large* group....50
E. Appendix V: CAAR for the *LIIB* and *Non-LIIB* group....51
F. Appendix VI: Proportion of bids with positive CAR per group....52
G. Appendix VII: Regression outputs including year dummies....53
H. Appendix VIII: Development of CAAR per robustness test....54
I. Appendix IX: Proportion of bids with positive CAR per robustness test....55
J. Appendix X: Legal framework....56

List of tables

Table I – Number of transactions excluded by each criteria 16
Table II – Takeover bid characteristics per year 17
Table III – Summary statistics of M&A advisor groups 22
Table IV – Deal characteristics per type of takeover bid 24
Table V – Characteristics of robustness tests 26
Table VI – Development of CAAR and proportion of bids with positive CAR 28
Table VII – Summary statistics and t-test per group of M&A advisors 31
Table VIII – Development of CAAR for the *Large* and *Non-Large* group 32
Table IX – Development of CAAR for the *LIIB* and *Non-LIIB* group 33
Table X – Regression outputs per M&A advisor group 34
Table XI – Results of robustness tests 37
Table XII – Probit model output per M&A advisor group 37

List of figures

Figure I – Overview of event study windows 18
Figure II – Development of CAAR 29
Figure III – Development of proportion of bids with positive CAR 30
Figure IV – Development of CAAR for the *Large* and *Non-Large* group 32
Figure V – Development of CAAR for *LIIB* and *Non-LIIB* group 33

I. Introduction

"*You start with a handful of people, but when you get close to doing something the circle expands pretty quickly. You have to bring in directors, two or three firms of lawyers, investment bankers, public relations people, and financial printers, and everybody's got a secretary. If the deal is a big one, you might need a syndicate of banks to finance it. Every time you let in another person, the chance of a leak increases geometrically*"

J. William Robinson (Keown and Pinkerton, 1981)

Upon the announcement of a public takeover bid there is generally a positive reaction in the target's stock price, as a response to the premium offered by the bidder to the target's shareholders. If there are market participants with the ability to legitimately predict an impending bid or obtain knowledge about it through illegal insider information leakage, they have an opportunity to make a short-term profit that carries low risk. If these participants homogenously trade on this information, abnormal stock price increases are likely to occur. These abnormal stock price increases are referred to as pre-bid run-ups.

Pre-bid run-ups are important to study as informed traders profit from taking advantage of uninformed traders and as the source of their information might be illegal.[1] Previous explanations for pre-bid run-ups suggest the phenomenon is a result of either the stock market's ability to anticipate the impending bid based on public information, or the result of illegal exploitation of insider information through trading by corporate insiders or leakage of the private information to third parties. Prior research has struggled to provide evidence to exclusively support one theory. However, without regards to what explanation one considers as the most accurate, the importance of insider information leakage as a vital component remains. Research supporting the market anticipation hypothesis often believes insider information feed media rumours, and in the illegal insider information leakage hypothesis, leakage is one of the two mechanisms through which insider information is being exploited. Further assessment of previous research on information leakage yields the insight that the size of the involved firms' corporate network could be a crucial factor impacting the level of insider information leakage and that the behaviour of the M&A advisor involved in the takeover bid impacts the risk of insider information being exploited in adverse ways.

[1] See appendix X for the legal framework governing insider information in Sweden

To assess the existence and magnitude of pre-bid run-ups in Sweden, we analyse 225 public takeover bids on the Swedish equity markets between the years 1999 and 2017. The analysis is extended by estimating the relative size of the corporate network of the bidders' M&A advisor, to examine if the corporate network of the M&A advisor impacts the magnitude of the pre-bid run-ups. We find that on average, 24% of the total abnormal return associated with public takeover bids occurs prior to the public announcement. Our results also show that the pre-bid run-ups are greater in takeover bids in which an M&A advisor with a relatively large corporate network advise the bidder, compared to takeover bids with an M&A advisor with a relatively small corporate network. Further, the results remain when controlling for characteristics of the takeover bids as well as when conducting robustness tests. This leads us to conclude that insider information leakage is an important factor with respect to the presence of pre-bid run-ups**.**

The remainder of the paper is structured as follows. Section II provides an overview of the prior field of research on the subject. Section III develops our research hypotheses. Section IV describes this study's approach to the underlying data and methodology. Section V presents the results and places them in the context of prior research, in combination with a discussion of their implications. Section VI provides robustness tests. Finally, Section VII concludes.

II. Theoretical framework

A. Introduction to pre-bid run-ups

In public takeover bids, the shareholders of target firms are often offered a large premium to ensure their acceptance of the takeover bid. The larger the premium, the greater the expected stock price reaction upon the announcement, and the higher the value that could be extracted from possessing knowledge of the impending takeover bid prior to the first public announcement. In some cases, abnormal stock price movements prior to the first announcement of these bids are observed, a phenomenon referred to as pre-bid run-ups. The pre-bid run-up reflects the incorporation of some kind of information in to the market, evidenced by an abnormal price increase. If there is a group of market participants with advance knowledge of the impending bid, these abnormal stock price increases could be driven by their actions.

The literature within this field of interest has mainly emphasised two explanations for pre-bid run-ups. The first is the insider trading information leakage hypothesis. This strand of the literature views pre-bid run-ups as being due to illegal insider trading by either corporate insiders or third parties with possession of the information. The second explanation is the market anticipation hypothesis, which proposes that pre-bid run-ups reflect the market's ability to anticipate and predict the impending bid through analysis of publicly available information.

The existing empirical evidence is inconclusive. Research on pre-bid run-ups started in the 1980s and has mainly focused on the U.S., with later studies analysing other markets such as Canada and the U.K. One important recent study of pre-bid run-ups in Sweden is Kleman and Wehtje (2009), who examine pre-bid run-ups between 1998 and 2008. Kleman and Wehtje report a pre-bid run-up of 8.8% from 30 trading days prior to the announcement date to the day before, an average abnormal return of 21.7% on the announcement day, and a total cumulative average abnormal return ("CAAR") of 31.2% when the announcement day is included. The average pre-bid run-up is statistically significant at the 1% level from 5 trading days before announcement.

B. The insider trading information leakage hypothesis

Keown and Pinkerton (1981) is the first study to claim support for the insider trading information leakage hypothesis. The authors study pre-bid run-ups in combination with registered insider transactions in the U.S. during the 1970s. They find positive CAAR starting from 25 trading days prior to the first announcement. They estimate an average pre-bid run-up during the measurement interval preceding the announcement day of 13.3% and a total CAAR,

including the stock price reaction on the announcement date, of 25.3%, which indicates that about half of the CAAR is achieved prior to announcement. The authors completely assign these results to leakage of insider information and argue that impending merger announcements are poorly held secrets. They reason that even though trades by registered insiders are monitored by the Securities and Exchange Commission ("SEC"), trades can easily be carried out through friends or relatives of corporate insiders, or employees that are not registered. Based on their finding that registered insider trading is absent during the testing period, in combination with increased trading volume, they suggest that insider trading is conducted via third parties. They further argue it is impossible not to believe that information is leaked, as the number of people involved in a deal with knowledge of privileged information prior to the public announcement is immense, and the risk of a leak increases geometrically with the number of people involved.

Meulbroek (1992) confirms the importance of illegal insider trading conducted by corporate insiders in explaining pre-bid run-ups. Using trading data from cases where the SEC has confirmed illegal trading activity, she finds a pre-bid run-up of 13.0% and a total CAAR of 30.6%, which implies that 42.5% of the total CAAR is achieved prior to the announcement date. Furthermore, she finds a relationship between abnormal returns and illegal insider trading, as there is an average abnormal return of 3% on days with illegal insider trading activity and half of the pre-bid run-up over the 20 trading day period prior to the public announcement is observed on days when insiders trade illegally. Her results lead her to argue insider trading is accompanied by instantaneous price movements and fast price discovery, i.e. the market detects the presence of informed traders and thus incorporates this in prices, resulting in abnormal returns on days when insiders trade. She further states that measuring self-reported corporate insider transactions is not suitable when assessing pre-bid run-ups as corporate insiders cannot by definition trade legally on valuable information about an impending takeover bid, leading to the belief that they will avoid reporting these transactions. Of importance is also that only 24% of the defendants in her sample are employees of the target company in which the illegal trading has been made, implying that illegal insider trading seldom is conducted through corporate insiders themselves, but rather through third parties or by market participants who obtained the information through leakage.

The method of using cases of known insider trading is also performed by Cornell and Sirri (1992) who study the effect on Campbell Taggart's stock price when news about the impending takeover of Campbell Taggart by Anheuser-Busch were leaked by a director at Anheuser-Busch. The authors find that insider trading had a significant impact on the price of Campbell

Taggart, leading to a substantial pre-bid run-up before the public announcement of the takeover. These results are in line with the conclusions presented by Meulbroek (1992) and are consistent with the suggestion that the existence of pre-bid run-ups is attributable to trading conducted by informed traders with advance knowledge of the impending bid.

Other studies that also find evidence in favour for the insider trading information leakage hypothesis by using data on illegal insider trades made public through prosecutions by U.S. regulators include Chakravarty and McConnell (1997, 1999) and Fishe and Robe (2004).

C. The market anticipation hypothesis

Not everyone agrees that pre-bid run-ups reflect illegal insider trading. One of the earliest studies to conclude that pre-bid run-ups are instead a result of a well-functioning market is Jensen and Ruback (1983), who conduct a meta-analysis of studies on the market for corporate control. Jensen and Ruback report that around half of the abnormal returns associated with merger announcements are achieved in advance of the public announcement. They dispute the view that pre-bid run-ups could be the result of illegal insider trading and instead argue that sophisticated investors, such as researchers and analysts, are able to anticipate the upcoming bid and that pre-bid run-ups are hence an unbiased response to public information increasing the likelihood of a takeover.

Another early example is Jarrell and Poulsen (1989), who examine several factors related to the market activity before public announcement of takeovers in the U.S. between 1981 and 1985. Specifically, the authors examine whether the impact of media speculation, size of previous ownership of the acquirer, hostility of the takeover, and insider trading prosecutions have an effect on the magnitude of pre-bid run-ups. Their results regarding the existence of pre-bid run-ups are in line with previous research as they document significant pre-bid run-ups during the 20 trading days before the public announcement of 11.0%, and a total CAAR, including the announcement date, of 24.9%, which means that 44.2% of the total CAAR is achieved prior to the announcement date. They find that the presence of rumours in the media about an impending takeover bid on a specific target is the most important explanatory variable for pre-bid run-ups. Their results also show that pre-bid run-ups are larger when the acquirer holds a relatively large position in the target company before the announcement of the bid. However, they do not find any evidence that the presence of illegal insider trading leads to greater pre-bid run-ups, in contrast to Meulbroek (1992) and Cornell and Sirri (1992). Since previous ownership of the acquirer and media speculation can be publicly observed, Jarrell and

Poulsen attribute the existence of pre-bid run-ups to the market's ability to anticipate the impending bid based on public information.

However, even though Jarrell and Poulsen (1989) view media speculation as public information, they mention that the source of the speculation is not evident. It might be the case that insider information leakage feeds the rumours, thus indicating that insider information leakage is the source of media speculation, rather than analysis of public information. Jarrell and Poulsen (1989) also cite Stern and Jereski (1986), who propose another source of the street talk and rumours: the memo that is published internally when investment bankers are hired in new mandates, which puts their corporate client on a restricted list to avoid conflicts of interest. The mere appearance of a company's name on this list is sufficient information to feed street talk as employees of the investment bank learn about the fact that there is an upcoming deal related to the company.

Some more recent studies have focused on volume and price dynamics prior to takeover bids, in combination with the characteristics of the market's response to the announcement of takeover bids. One example is King and Padalko (2005) who study pre-bid run-ups on the Canadian stock market between 1985 and 2002 to establish whether the insider trading information leakage hypothesis or market anticipation hypothesis is the most likely explanation. As both theories are based on trading by informed traders at the expense of uninformed traders and the identities of informed traders are not known either before or after the event, it is difficult to distinguish the two theories. To deal with this issue, King and Padalko use two theoretical models of informed trading and stylised facts from empirical models through known cases of insider trading and trading ahead of unscheduled announcements. Based on this, they establish expectations regarding the price and volume dynamics for each of the two explanations, and then compare their sample to these expectations to draw conclusions about which is most likely. King and Padalko (2005) find an average pre-bid run-up of 5.7% during the 60 trading days before the announcement day and a total CAAR, including the announcement day return, of 17.5%. Based on their findings of price and volume dynamics, they attribute pre-bid run-ups to the market anticipation hypothesis. However, as there exist plenty of outliers in their sample with characteristics in favour of the illegal insider trading information leakage hypothesis, they cannot fully rule out the illegal insider trading hypothesis.

Other studies arguing for the ability of sophisticated investors to legitimately predict impending takeover bids include Gupta and Misra (1989) and Pound and Zeckhauser (1990).

D. Assessment of empirical evidence

Prior research regarding possible explanations for pre-bid run-ups is inconclusive. It is difficult to reject either explanation and as both are related to the presence of informed traders, the two theories are difficult to separate. Informed traders could either be insiders that trade illegally, third parties with access to insider information, or market participants with the ability to anticipate an impending takeover bid. Further, as Minenna (2003) argues, identifying the presence of illegal insider trading exclusively with econometric techniques is a problematic task. Also, as Keown and Pinkerton (1981) state, if an insider is going to trade illegally on private information, the insider is likely going to act in such a way that she minimises the risk of being detected, which further increases the difficulty of identifying illegal insider trading.

Related to this is that a market participant can only be considered an insider as long as the private information she possesses is valuable and few know about it. As indicated by Sanders and Zdanowicz (1992), when information is leaked, and an increasing number of market participants gain access to it, it becomes increasingly difficult to distinguish between public and private information and hence between informed and uninformed investors.

The insider trading information leakage hypothesis is largely based on information leakage, rather than actual trading done by insiders. Furthermore, rumours in media, which in turn might be driven by leakage of insider information, are considered to be a strong driver in the market anticipation hypothesis. These two facts combined implies that regardless of which theory one favours, information leakage is an important factor that needs to be considered. Insider information leakage can in turn originate from many different sources, with one of the most evident being those who are working with the takeover bid prior to the public announcement.

E. M&A advisors and private information

King and Padalko (2005) refer to corporate insiders as senior management, members of the board, controlling shareholders, or financial intermediaries acting as fiduciaries to the firm, e.g. legal counsels, investment bankers or auditors. A majority of the previously mentioned potential insiders generally work with, or receive information on, a public takeover bid prior to the public announcement and the plausible sources of insider information leakage in a takeover bid are hence several.

This reasoning is extended by Acharya and Johnson (2010) who say that it almost seems like a truism to believe that more insiders should lead to more insider trading. They study trading activity in stocks, options, bonds and credit default swaps between 2000 and 2006 for an

interval immediately preceding buyout announcements by private equity firms of public targets in the U.S. Their main results are that insider trading in stocks and options is more likely if the equity syndicate is large, and that insider trading in bonds and credit default swaps is more likely if the debt syndicate is large. They illustrate this finding by stating that larger financing syndicates have played a role in stimulating a greater degree of information exploitation, as larger pools of participants on both the equity and debt side imply that more people are in possession of the information prior to the public announcement of a deal. Furthermore, they find that a larger number of bank relationships connected to the target firm results in more insider trading in the target firm's financial instruments prior to the takeover announcement. They argue that the banks with whom the target firm has an established relationship prior to the takeover bid are likely to be approached by the bidder as potential financiers for the takeover, which means a large number of bank relationships imply more banks with knowledge about the upcoming takeover bid. Moreover, they state that the approached banks might in turn share this information with their stakeholders, which results in an even greater circle of people with private information about the bid. This implies that the size of the corporate network of the involved players matters for the risk of insider information leakage.

M&A advisors play an important role in M&A transactions as they advise bidder and target firms. By providing technical and tactical assistance throughout the takeover process, they reduce transaction costs and enhance external corporate governance. Chang et al. (2016), propose the choice of M&A advisor depends on several factors, including industry expertise, advisor reputation, acquirer experience, deal complexity and target business structure. They test the importance of the advisor's industry expertise and concerns about the risk of insider information leakage to industry rivals in the choice of M&A advisor in almost 13,000 mergers announced between 1985 and 2008. Apart from confirming the conjecture that industry expertise is of utmost importance, they find that a bank is less likely to be chosen as an advisor if it has a past relationship with one of the firm's major product-market rivals. The conclusion is that the risk of insider information leakage is of importance as private information in the hands of M&A advisors is not considered to be completely protected.

Another study of insider information in the hands of M&A advisors is Bodnaruk et al. (2009), who study holdings in M&A targets by financial conglomerates in which associated investment banks advise the bidders. They provide evidence that investment banks in possession of valuable private information about target characteristics, bidder intentions, and terms of the deal, take positions in the targets before the M&A announcement. Their results

support the idea that the advisory bank can exploit its privileged information about the intentions of the bidding company with regards to the potential target and the reservation price. As this information is unavailable to other market participants, the advisor receives an informational advantage ahead of the deal and can exploit the private information by taking a position in the target firm. Profits are hence obtained if the expected value appreciation of the target firm at the time of the takeover bid announcement is fulfilled.

The idea that financial intermediaries trade on private information received through advising in M&A transactions is not uncontroversial. For example, Griffin et al. (2012) employ broker level trading data to systematically examine possible cases of connected trading by brokerage houses preceding major announcements based on information received through their affiliated investment bank. They examine trading by clients of connected brokerage houses before takeover announcements during a period of 2 to 20 trading days. If the advisory part of the investment bank passes on valuable private information, either internally or to their clients, the recipients of the information could acquire shares in the takeover targets in advance of the announcement. Their results do not indicate that target or acquirer advisors' clients make trades prior to takeover announcements, in contrast to Bodnaruk et al. (2009). They do however find that there exist wealthy individuals who are net buyers prior to takeover announcements. The authors propose this is a sign of the use of inside information by connected individuals for themselves or their friends, rather than through their firms. The authors conclude it is not evident that investment banks and other advisors take advantage of inside information in ways that are traceable, but rather choose to do it on their personal accounts, or in other ways that make it more difficult to trace.

Against the background of this research, it is apparent that there are several sources of potential insider information leakage. What may also drive the risk of leakage is the number of insiders involved in each deal as well as the size of the involved firms' corporate networks. Among the parties involved in a deal, it has been particularly stressed that the risk of insider information leakage is of importance in the choice of M&A advisor and that M&A advisors might exploit the private information they possess, which implies that it is of interest to assess the impact of M&A advisors on pre-bid run-ups.

III. Research hypotheses

Using a sample of 225 takeover bids on the Swedish equity markets between 1999 and 2017, we test two hypotheses. The first is to establish whether pre-bid run-ups, as evidenced by previous studies, exist on the Swedish equity markets. The first null hypothesis we aim to reject is hence the following:

> $H0_1$: The cumulative abnormal returns prior to the announcement of public takeover bids in Sweden are on average not greater than zero

Given the ambiguity of prior research regarding what explains pre-bid run-ups, the aim of our study is not to support one explanation or the other, but instead to emphasise the importance of insider information leakage. Based on the finding by Chang et al. (2016) about the risk of information leakage as an important factor in the choice of M&A advisor, in combination with the findings by Bodnaruk et al. (2009) and Griffin et al. (2009) about M&A advisors potentially exploiting insider information by either taking positions directly or leaking the information to individuals with close relationships to the M&A advisor, we investigate whether M&A advisors in Sweden fail to keep private information private.

Furthermore, Acharya and Johnson (2010) conclude that the risk of insider information leakage increases with the level of corporate connections of the firms involved in a takeover bid. They illustrate this by stating that in a takeover bid, the banks with which the target has an ongoing relationship prior to the bid are likely to be approached by the bidder as a potential co-financier, and thus learn about the upcoming bid. We extend this reasoning to the M&A advisors' corporate network using the following logic. To value the target and provide advice on the structure of the bid, the M&A advisor typically needs to bring in other advisors, e.g. consultants, auditors, and legal firms. An M&A advisor with multiple active relationships with these parties is likely to approach a greater number of such parties with a proposed collaboration on the takeover bid, in comparison to an M&A advisor with few relationships. Thus, an increased size in the corporate network of an M&A advisor implies that more people learn about the bid prior to its announcement, which leads to a greater risk of information leakage. Based on this reasoning and the explanation advanced in prior research that insider information leakage is an important factor for pre-bid run-ups, the second null hypothesis we aim to reject is the following:

$H0_2$: Hiring an M&A advisor with a large corporate network to advise in a public takeover bid prior to announcement does not on average lead to a greater pre-bid run-up compared to hiring an M&A advisor with a small corporate network

A rejection of this hypothesis would indicate that information leakage is in fact an important factor explaining pre-bid run-ups, as the market's potential ability to anticipate an impending takeover bid, if not based on leaked insider information, should be unrelated to which M&A advisor is hired to work with a bid and the size of that advisor's corporate network.

IV. Data and methodology

A. Data collection and management

We require several types of data to examine the presence and magnitude of pre-bid run-ups, including dates and target firms for historical public takeover bids. We obtain relevant data for the period 1999 to 2017 from Mergermarket and S&P Capital IQ. In order to ensure that we cover as many relevant transactions as possible, we conduct comprehensive searches using two main approaches. The first approach includes searches for transactions specifically classified as public takeover bids and the second approach includes searches for all bids in the public arena. Beyond public takeover bids, the second search also includes other transactions such as takeover bids on foreign targets by Swedish bidders, private placements and carve-outs of specific divisions. We also nuance the approaches by conducting searches for both domestic and foreign acquirers, for both strategic and financial acquirers as well as for both failed and successful transactions. Using two data sources minimises the risk of missing relevant takeover bids, but also means that many transactions appear several times. When we combine the different lists and remove all duplicates, the total number of transactions is 688.[2]

From this set of transactions, we manually inspect each press release and remove all that are not a public takeover bid for the total equity of an entity listed in Sweden. This means that we exclude transactions outside Sweden, bids for divisions, reversed takeovers, private placement transactions, and other transactions not desired. In some takeover bids, after the first bid, other bidders emerge with the aim to trump the initial bidder with an increased bid. We exclude these follow-on bids from our sample, as including them would skew the results.[3]

We obtain daily stock prices for each target firm from Finbas by SHoFDB and S&P Capital IQ for the period from at least one trading year prior to and at least one trading month succeeding the announcement of the bid. We exclude events for which we cannot find stock price data, as well as those with more than 25% missing stock price data during the estimation window, which is a conservative approach.[4] After applying these filters, our final sample includes 225 takeover bids. Table I shows an overview of the number of transactions excluded when assessing each exclusion criteria.

[2] Even though we use two independent databases to cover as many takeover bids as possible, it is still possible that we miss some bids. The results of this study are therefore attributable only to our sample of events, and not to potential missed bids

[3] The cumulative abnormal return of follow-on bids mechanically includes the stock price reaction to the initial bid, making it meaningless as a measure of pre-bid run-up

[4] For example, King and Padalko (2005) include events that have up to 75% of missing stock price data

Table I – Number of transactions excluded by each criteria
The table reports the number of transactions removed when assessing each of the exclusion criteria used in the screening process for public takeover bids to be analysed in the study.

Criteria for exclusion of transaction	Removed	Remaining
Doublets	n.m.	688
Bids on foreign targets	220	468
Bids on divisions, private placement transactions and equivalent	183	285
Follow-on bids	34	251
Targets with insufficient stock price data	26	225
Final sample of takeover bids	463	225

When measuring pre-bid run-ups, it is critical to correctly date the public takeover announcement (Jarrell and Poulsen, 1989). Therefore, we double check each announcement date reported by Mergermarket and S&P Capital IQ using press articles identified with Retriever Research and make corrections when it is deemed necessary. We do this in order to find the accurate announcement date, defined as the date when it is officially confirmed the acquirer has launched a public takeover offer.

When the announcement occurred after trading hours, we use the next trading day as the announcement date. We focus on the announcement date, rather than the date when the first rumour appears in media, as is done by for example King and Padalko (2005), based on the fact that the definition of a leak is when actual knowledge of the information is in the hands of other individuals than registered insiders before the official public announcement of the information. The announcement date is the intended date that private information is made public, indicating that any informed trading prior to the announcement date is based on private information. In mandatory offers, we make an exception: instead of the official announcement date, we use the date when it is officially confirmed that a large shareholder has surpassed the level of ownership (30% of the voting rights) necessary to require the shareholder to make an offer on the remaining shares of the target entity. We do so because this date is when the market can conclude, based on public information, that a mandatory offer is on the way.

We identify the M&A advisor(s) involved in each deal using data from Mergermarket and S&P Capital IQ, which we double check using press articles. We also keep track of the structure of the bid (cash or share), and consider cases with a cash alternative for shareholders who hold only a small number of shares as non-cash deals.

Table II presents characteristics of the takeover bids by year, including data on number of takeover bids per year, deal value and premiums. A brief inspection of the data yields the insight that the characteristics vary from year to year. The annual number of takeover bids ranges from 4 to 20 with the most intense period being prior to the financial crisis in 2008. Average deal

value is greatly affected by individual outliers making the figure range from EUR 100 million to EUR 1,373 million, which makes it more dispersive than the median figure. By assessing the premiums, it can be observed that premiums are varying over time, regardless of which measurement is used. A list of all takeover bids in the sample can be found in appendix I.

Table II – Takeover bid characteristics per year
The table reports summary statistics per year for all public takeover bids in the sample.

Year	Number of takeover bids	Average deal value (EURm)	Median deal value (EURm)	Average 1 day premium	Median 1 day premium	Average 30 day premium	Median 30 day premium
1999	17	986	305	30.5%	29.8%	54.7%	38.0%
2000	17	422	186	21.2%	17.9%	33.2%	30.0%
2001	16	451	139	29.8%	19.8%	71.6%	32.3%
2002	4	276	241	34.0%	35.4%	64.6%	31.4%
2003	12	375	113	23.4%	19.8%	29.1%	23.4%
2004	10	290	35	21.5%	16.2%	21.8%	18.4%
2005	10	729	207	12.4%	9.8%	9.1%	12.6%
2006	16	1,373	231	13.7%	11.6%	21.7%	19.8%
2007	20	405	128	18.8%	16.6%	20.8%	21.8%
2008	20	161	87	35.2%	22.1%	26.0%	23.3%
2009	5	152	63	15.4%	18.3%	29.1%	20.0%
2010	13	271	108	19.9%	16.9%	17.6%	18.2%
2011	11	273	70	24.6%	28.6%	29.2%	33.2%
2012	7	100	25	22.8%	30.2%	28.6%	23.4%
2013	4	377	40	18.6%	18.7%	29.7%	34.3%
2014	12	619	63	31.2%	18.8%	42.5%	39.5%
2015	14	322	57	32.5%	27.4%	35.1%	31.9%
2016	10	1,071	213	29.0%	25.8%	45.1%	35.1%
2017	7	129	44	21.4%	17.3%	23.7%	25.7%
Full sample	225	503	126	24.5%	20.1%	33.2%	26.3%

Note: premium is measured as the closing price on the zero date compared to the closing price 1 trading day and 30 trading days prior to the zero date

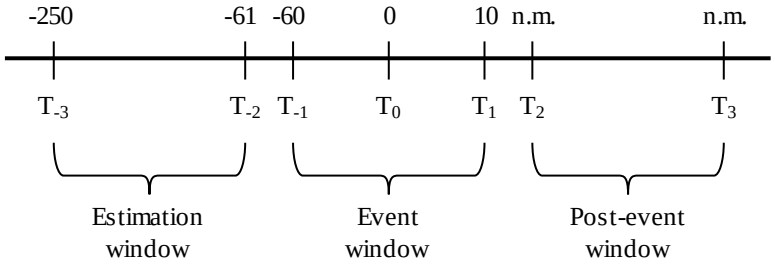
To calculate expected returns, we use the OMX Stockholm PI index, which we obtain from Finbas by SHoFDB and S&P Capital IQ, and Fama-French factors, which we also obtain from Finbas.

B. Event study methodology

In order to estimate the presence and magnitude of pre-bid run-ups in the sample, we use a standard event study methodology as described by MacKinlay (1997). The construction of an event study generally requires the definition of three time periods, the estimation window, the event window, and the post-event window. However, as the focus in this paper is abnormal returns preceding, rather than succeeding, the first announcement of public takeover bids, it is not meaningful to define and include a post-event window. The zero date ("T_0") in this paper is the announcement date as described in Section IV. *Data and methodology*. Inspired by King and Padalko (2005), the estimation window begins at 250 trading days before the announcement date and spans over 190 trading days, ending 61 trading days before the announcement date, [-250, -61]. The event window commences at 60 trading days before the zero date and ends 10 trading days after the zero date, [-60, 10]. The event window is designed to capture both

abnormal returns before the announcement of a bid as well as the market's reaction to the actual announcement. This means that the event window contains a pre-bid run-up period, a period to measure the abnormal return upon announcement, as well as a period succeeding the announcement day to cover potential post-announcement drifts. This is based on the methods used by e.g. King and Padalko (2005) and Jarrell and Poulsen (1989). Therefore, whenever we mention pre-bid run-ups, any cumulative abnormal returns after T_{-1} and prior to T_0 is referred to. The estimation window and the event window are set without overlap to prohibit potential influence of the event window on the estimation period, and together they cover approximately one trading year. See figure I for an illustration of the defined windows.

Figure I – Overview of event study windows
The figure displays an overview of the two windows used in the estimation of abnormal returns. The upper row displays the number of trading days in relation to the zero date.



C. Estimation of abnormal returns

The goal of the event study methodology is to calculate abnormal returns during the event window. Abnormal returns ("AR") are calculated as:

$$\boldsymbol{AR_{it} = R_{it} - E(R_{it}|X_t)} \qquad \textit{(Equation I)}$$

where AR_{it}, R_{it}, and $E(R_{it}|X_t)$ are the abnormal, actual, and normal returns for firm i in period t.[5] As MacKinlay (1997) states, the normal returns can be estimated using either the constant mean return model, statistical models, or economic models. We use the market model, which is a statistical model, for our main tests. We do this based on the reasoning by MacKinlay (1997) that statistical models exclude assumptions regarding investor behaviour that are included in economic models, but are still able to explain some portion of the variation in returns, as opposed to the constant mean return model. By using the market model, normal returns are estimated as:

[5] We use simple returns as actual returns. We have assessed the effects of using log returns and the results are not sensitive to the choice of returns

$$E(R_{it}|X_t) = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad \textit{(Equation II)}$$

where R_{it} is the return for target i in period t and R_{mt} is the market return in period t. We use the daily return of the OMXSPI index as a measure for the Swedish equity market. The parameters α_i and β_i are estimated for each target i by an OLS regression that spans during the estimation window. Two important assumptions of ε_{it} are:

$$E(\varepsilon_{it}) = 0 \quad \textit{(Equation III)}$$

$$Var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2 \quad \textit{(Equation IV)}$$

By combining equation I and II with the assumptions of ε_{it}, AR_{it} is calculated for each trading day t during the event window as:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \quad \textit{(Equation V)}$$

To estimate pre-bid run-ups across firms and time in the sample, the AR_{it} is aggregated in two steps. First, the AR_{it} is aggregated over time for each firm, which yields the cumulative abnormal return ("CAR") for each takeover bid i:

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it} \quad \textit{(Equation VI)}$$

Second, the cumulative average abnormal return ("CAAR") is calculated by averaging the CAR across bids for each timespan (t_1, t_2) such that:

$$CAAR(t_1, t_2) = \frac{1}{N}\sum_{i=1}^{N} CAR_i(t_1, t_2) \quad \textit{(Equation VII)}$$

Two approaches are used to test the significance of CAAR in the sample. First, we calculate the parametric t-statistic for each day during the event window such that:

$$T_t = \frac{CAAR(-60, t)}{\frac{s_t^2}{\sqrt{n_t}}} \quad \textit{(Equation VIII)}$$

in which t ranges throughout the event window [-60, 10], s_t^2 represents the sample variance of CAR(-60, t), and n_t represents the number of observations at t. The t-tests we perform are one-sided, as the goal is to evaluate whether the CAAR is greater than zero, rather than different from zero.

One issue with a parametric test is that it assumes certain characteristics about the underlying sample distribution. Therefore, to nuance the significance of our results, we also employ the nonparametric Wilcoxon Signed Rank test, which assumes the CAR is independent across bids and with the null hypothesis that the proportion of firms with positive abnormal returns are 0.5. The test statistic in the Wilcoxon Signed Rank test is calculated for each trading day throughout the event window as follows:

$$\theta_t = \left(\frac{N_t^+}{N_t^-} - 0.5\right) * \frac{\sqrt{N_t}}{0.5} \qquad \textit{(Equation IX)}$$

where N_t^+ and N_t^- represent the number of observations on trading day t with CAR(-60, t) greater than and less than zero. The Wilcoxon Signed Rank test is also performed as a one-sided test, as we aim to determine whether the proportions of bids with positive CAR is greater than rather than different from 0.5.

We also calculate the run-up index, which is an additional measure of the magnitude of pre-bid run-ups. The run-up index measures the CAR before announcement in relation to the CAR on announcement day. This measure is used in multiple studies on pre-bid run-ups, e.g. Meulbroek (1992) and Jarrell and Poulsen (1989) and is designed to measure the proportion of the total abnormal value increase that is achieved prior to the announcement day. We calculate the run-up index to facilitate comparison of pre-bid run-ups in our study in relation to previous studies. The run-up index is defined as:

$$Run - up\ index_t = \frac{CAAR(-60,\ t)}{CAAR(-60,\ 0)} \qquad \textit{(Equation X)}$$

D. CAAR per M&A advisor

Rather than trying to explain pre-bid run-ups through a theoretical model, as has been done by recent studies, we follow an empirical approach to determine whether the impact of information leakage on pre-bid run-ups is important. If information leakage is not important for pre-bid run-ups, any characteristic of the M&A advisor that is involved in the process leading up to a takeover bid should be uncorrelated with the market's ability to anticipate that bid. However, any significant differences between advisors should establish that information leakage is an important factor. Therefore, combined with support provided in prior research regarding the impact of the size of the corporate network of the involved players in a takeover bid, we examine the effect of the estimated size of the corporate network of an involved M&A advisor.

In a majority of the bids in our sample, both the bidder and target firms hire M&A advisors to advise in the execution of the process. We limit our focus to the bidder's M&A advisor as we aim to minimise the risk of an M&A advisor being hired after the announcement, and thus not having any private information of the takeover bid before announcement. Target firms are likely to hire M&A advisors after the announcement of a bid, to e.g. conduct a fairness opinion, whereas the bidder's M&A advisor often advise the bidder on the structure of the bid and will therefore by definition have private information before announcement.

Although there are 76 different M&A advisors in our sample, we focus on the 20 most active advisors, measured as the number of bids in our sample. We do this to minimise the risk of noise from infrequent advisors with outlier values to impact our results. We calculate the CAAR(-60, t) per M&A advisor as:

$$CAAR_x(-60,t) = \frac{1}{N_x}\sum_{i=1}^{N_x} CAR_{i,x}(-60,t) \qquad \textit{(Equation XI)}$$

where N_x represents the number of bids in which M&A advisor x is hired by the bidder and $CAR_{i,x}(-60,t)$ represents the measured CAR at t trading days before the bid announcement, for bid i in which M&A advisor x is hired by the bidder.

To test our second research hypothesis, it is necessary to measure the size of each M&A advisor's corporate network. However, measuring the exact size of an M&A advisor's corporate network introduces several difficulties as it is cumbersome to assess the number of relationships the M&A advisor has and even if we had an appropriate measure to use, the task of finding public data on this is merely impossible. To circumvent this issue, we estimate which M&A advisors have a relatively large corporate network compared to other M&A advisors. To conduct this estimation, we use two approaches. In the first approach, we proxy the corporate network of the M&A advisors by their median deal value in the sample. We argue that the larger the deal, the greater the variety of other firms and number of people involved, and that M&A advisors who are typically involved in larger deals should therefore, over time, accumulate a more extensive corporate network. We rank the M&A advisors based on median deal value and then create two groups, one containing the 25% of M&A advisors with the highest median deal value, the *Large* group, and one containing the rest. We then divide the bids in two groups, one group containing all bids in which an M&A advisor from the *Large* group advise the bidder and one group with the rest of the bids, the *Non-Large* group.

As a second method to proxy for the size of the M&A advisors' corporate network, we use the notion of large international investment banks, commonly referred to as bulge bracket banks. We argue that the large international investment banks have a large corporate network, as they are large financial institutions that provide a broad range of services that require well-established connections with third parties in related areas, e.g. consultant, auditors, and legal firms. Furthermore, large international investment banks continuously advise on large deals with many stakeholders involved, which should further drive the accumulation of a large corporate network. We apply the same grouping method as we did in the first approach, i.e. we create one group of takeover bids in which a large international investment bank advised the bidder, the *LIIB* group, and one group containing all other bids, the *Non-LIIB* group. Table III shows a summary of the two groups created with both methods which displays that the *Large* group contains 5 different M&A advisors advising on 23 takeover bids in total. The same figures for the *LIIB* group are 8 and 39 respectively. Evidently, the median deal value is almost ten times higher in the *Large* and *LIIB* groups compared to the *Non-Large* and *Non-LIIB*. With respect to the premium, there are no notable differences between the *Large* and *Non-Large* group. However, the average 30 day premium is 12 percentage points higher in the *LIIB* group compared to the *Non-LIIB* group.

Table III – Summary statistics of M&A advisor groups
The table reports summary statistics for *Large* and *LIIB* groups with a relatively large estimated size of the corporate network, compared to the two groups with a relatively small estimated size of the corporate network.

M&A advisor group	Number of M&A advisors	Number of takeover bids	Median deal value (EURm)	Average 1 day premium	Average 30 day premium
Large	5	23	859	20.83%	36.80%
Non-Large	15	202	89	24.97%	32.81%
LIIB	8	39	596	25.88%	43.03%
Non-LIIB	12	186	70	24.26%	31.16%

Note: the two groups Non-Large and Non-LIIB also include all M&A advisors outside of the 20 most active. Premium is measured as the closing price on the zero date compared to the closing price 1 trading day and 30 trading days prior to the zero date

To calculate the CAAR per group of takeover bids, we use the same approach as shown in Equation XI, but N_x and $CAR_{i,x}(-60,t)$ instead represent the number of takeover bids and measured CAR for all bids in which an M&A advisor from group x is hired by the bidder.

We then perform two tests for both grouping methods. First, we perform a two-sampled t-test with unequal variances for takeover bids pertaining to the groups *Large* and *LIIB* compared to *Non-Large,* and *Non-LIIB* respectively.

$$T_{t,Large} = \frac{CAAR(-60,\ t)_{Large} - CAAR(-60,\ t)_{Non-Large}}{\frac{s^2_{t,Large}}{\sqrt{n_{t,Large}}} - \frac{s^2_{t,Non-Large}}{\sqrt{n_{t,Non-Large}}}} \quad \textit{(Equation XII)}$$

$$T_{t,LIIB} = \frac{CAAR(-60,\ t)_{LIIB} - CAAR(-60,\ t)_{Non-LIIB}}{\frac{s^2_{t,LIIB}}{\sqrt{n_{t,LIIB}}} - \frac{s^2_{t,Non-LIIB}}{\sqrt{n_{t,Non-LIIB}}}} \quad \textit{(Equation XIII)}$$

In the above tests, t represents the number of trading days prior to the announcement date. We perform one-sided tests, as we want to test whether the involvement of a *Large* advisor or a *LIIB* advisor on average leads to greater pre-bid run-up.

The overall characteristics of a takeover bid can potentially impact the magnitude of the pre-bid run-up, and thus we control our results for four characteristics. First, we control for whether the bid is mandatory, as mandatory bids are the direct consequence of previous transactions, which might affect the dynamics of the bid. We expect the mandatory bids to have a lower pre-bid run-up on average due to two effects. Mandatory bids are made at equal terms with the transaction that triggered the mandatory bid, it is therefore not uncommon that the premium is lower or non-existent as the dynamics of block transactions are different from a public takeover bid. For example, as seen in table IV, the average premium in mandatory bids is lower compared to non-mandatory bids, both when measured as the 1 day and 30 day premium. Furthermore, mandatory takeover bids can be easier to anticipate before the event window as the mandatory bidder might have been a large owner for a long period of time, and ownership is publicly observable. With respect to these two effects, we expect the variable *Mandatory* to have a negative impact on the pre-bid run-up.

Second, the value of a bid that is paid in shares is not as straightforward to compute as that of a cash bid since the market price of the bidder's share can fluctuate, leading to ambiguity in the value of the bid, thus decreasing the value of information prior to announcement. Further, as seen in table IV the premium for cash bids are higher than non-cash bids. With respect to this, we expect the variable *Cash* to have a positive impact on the pre-bid run-up.

Table IV – Deal characteristics per type of takeover bid
The table reports summary statistics for the two dummy variables used in equation XIV and equation XV to control for other effects impacting the pre-bid run-up.

Type of bid	Number of takeover bids	Median deal value (EURm)	Average 1 day premium	Average 30 day premium
Mandatory	30	98	18.25%	18.46%
Non-Mandatory	195	128	25.51%	35.49%
Cash	190	124	26.31%	35.66%
Non-Cash	35	149	14.93%	19.98%

Note: premium is measured as the closing price on the zero date compared to the closing price 1 trading day and 30 trading days prior to the zero date

Third, as argued by Acharya and Johnson (2010), private information on bids for larger targets might be more difficult to keep secret as more people are involved. Further, the number of sophisticated investors trying to anticipate an upcoming bid might be greater the larger the target is. Since the median deal value in both the *Large* and *LIIB* groups are larger than the overall sample, there might be an influence on the magnitude of the pre-bid run-ups from the fact that the deals are large. As we want to separate the effect of an M&A advisor with a large corporate network having information from the fact the deal is large, we control our results for the size of the bid. We measure the size of the deal as the target's implied enterprise value in millions of EUR. In our regression, we take the natural logarithm of the deal value to normalise data, as the distribution of the variable is non-normal. We expect the variable *ln(Deal value)* to have a positive impact on the pre-bid run-up.

Finally, Acharya and Johnson (2010) reason that certain M&A market characteristics during a specific point in time, such as valuation levels, potentially affect the magnitude of pre-bid run-ups. Based on their reasoning, combined with the fact that the median deal value, number of takeover bids, and premiums vary a lot between the years in our sample, we control for any potential time specific effects by introducing year dummies.

The two estimations are done using OLS regression, and with the control variables added the regressions take the following form:

$$CAR_i(-60,-1) = \alpha + \beta_1 Large_i + \beta_2 Mandatory_i \qquad \textit{(Equation XIV)}$$
$$+\beta_3 Cash_i + \beta_4 ln(Deal\ value_i) + \sum_{t=1999}^{2016} \beta_t Year_{i,t}$$

$$CAR_i(-60,-1) = \alpha + \beta_1 LIIB_i + \beta_2 Mandatory_i \qquad \textit{(Equation XV)}$$
$$+\beta_3 Cash_i + \beta_4 ln(Deal\ value_i) + \sum_{t=1999}^{2016} \beta_t Year_{i,t}$$

In equation XIV $Large_i$ is a dummy variable taking value 1 if bid i is from the *Large* group and similarly, in equation XV, $LIIB_i$ is a dummy variable taking value 1 if bid i is from the *LIIB* group. The hypotheses we evaluate in both regressions are:

$$H_0: \beta_1 \leq 0 \qquad \textit{(Equation XVI)}$$

$$H_A: \beta_1 > 0 \qquad \textit{(Equation XVII)}$$

E. Robustness tests for pre-bid run-ups

When calculating the AR, the estimation of normal returns is important, and a biased estimation of the normal returns can lead to faulty conclusions. Therefore, we choose to test for robustness in the CAAR using different lengths of windows as well as two new estimation techniques. The new estimation techniques are the constant mean return model and the Fama and French three factor model ("FF3") (Fama and French, 1992). Using the constant mean return model, the AR during the event window is calculated as:

$$AR_{it} = R_{it} - \overline{R}_i \qquad \textit{(Equation XVIII)}$$

where $\overline{R}_i$ represents the average return for firm i during the estimation window. By using the FF3 model, the AR during the event window is calculated as:

$$AR_{it} = (R_{it} - rf_t) - \alpha_i - \beta_{1,i}(R_{mt} - rf_t) - \beta_{2,i} SMB_t - \beta_{3,i} HML_t \qquad \textit{(Equation XIX)}$$

where rf_t represents the risk-free return during period t, SMB represents the return of the size factor in period t, and HML represents the return of the value factor in period t. By using these new models and altering the window lengths on the market model, we perform a total of six robustness tests, summarised in table V.

Table V – Characteristics of robustness tests
The table reports the characteristics of all alterations of the methods as well as lengths of windows used in the robustness tests for pre-bid run-ups in comparison to the characteristics of the main test.

Robustness test No.	Estimation technique	Estimation window	Event window
1	Market model	[-500, -61]	[-60, 10]
2	Market model	[-250, -31]	[-30, 10]
3	FF3 model	[-250, -61]	[-60, 10]
4	FF3 model	[-500, -61]	[-60, 10]
5	Constant mean return model	[-250, -61]	[-60, 10]
6	Constant mean return model	[-500, -61]	[-60, 10]
Main test	Market model	[-250, -61]	[-60, 10]

Note: as the SHoFDB does not provide FF3 factors for the Swedish market during 2017, robustness tests number 3 and 4 exclude all takeover bids during 2017

F. Robustness test for pre-bid run-ups per M&A advisor

One potentially important variable for the magnitude of pre-bid run-ups is the premium offered to the target's shareholders, as it determines the size of the profits a market participant with knowledge of the bid prior to the announcement can make. Further, as shown in table III, the average premium varies between the M&A advisor groups, which indicates that the premiums might have an impact on the estimated coefficients on *Large* and *LIIB* in equation XIV and XV respectively. However, we cannot include the premium as a control variable in our OLS regressions, as it is mechanically correlated to the dependent variable CAR(-60, -1). As an illustrative example, the premium measured as the offer price in relation to the stock price 60 days prior to announcement equals the sum of CAR(-60, -1), CAR(-1, 0) and the normal return.[6] We instead define a new variable, $Run-up$, that is less influenced by the size of the premium. The $Run-up$ is defined as:

$$Run-up_i = \{1\ if\ CAR_i(-60,-1) > 0, 0\ else\} \qquad \textit{(Equation XX)}$$

$Run-up_i$ is a dummy variable that takes the value 1 if there is a pre-bid run-up in bid i. The $Run-up$ variable is also, by construction, unhampered by potential issues with outliers, which further promotes it as a complement to our main test, as it will correct any potential issues with results driven by outlier values in the CAR(-60, -1). We estimate the $Run-up$ variable by probit regression, which uses a maximum likelihood function to estimate a relationship between the dependent and the explanatory variables. The probit regressions we estimate take the following form:

$$Prob(Run-up_i = 1) = \phi(\alpha + \beta_1 Large_i + \beta_2 Mandatory_i + \beta_3 Cash_i + \beta_4 ln(Deal\ volume_i)) \qquad \textit{(Equation XXI)}$$

[6] The illustrative example is valid under the simplifying assumption that the closing stock price on the announcement day is equal to the offer price

$$Prob(Run-up_i = 1) = \phi(\alpha + \beta_1 LIIB_i + \beta_2 Mandatory_i + \beta_3 Cash_i + \beta_4 ln(Deal\ volume_i)) \quad \textit{(Equation XXII)}$$

where ϕ represents the cumulative distribution function of the model. The probit is usually preferred over the OLS when estimating a binary variable, as the probit always estimates a value within the range of 0 and 1, and is not limited to estimating a linear relationship between the dependent variable and the explanatory variables, as is the case for OLS. Since the probit model is non-linear in nature, the estimated marginal effect of a specific variable is dependent upon the values of the other variables in an observation. Therefore, we do not include year dummies in equation XXI and XXII since it would allow the estimated marginal effect from the presence of a *Large* or *LIIB* advisor to be time-varying, which is not desirable.

Since the estimated marginal effect of a specific variable varies with the other values in the model, we have to assume values for the control variables in equation XXI and XXII to properly interpret the coefficient β_1. We choose to estimate the effects of the *Large* and *LIIB* variables on $Prob(Run-up_i = 1)$ with the partial effect at the average ("PEA"). The PEA measures the marginal effect of increasing a variable by one unit or switching from 0 to 1 in the case of a dummy, when all the other variables are assumed to be their sample averages. In addition to *Large* and *LIIB*, 2 out of 3 explanatory variables in equation XXI and XXII, *Cash* and *Mandatory*, are dummy variables, for which sample averages do not make sense, as they can only take on values of 0 or 1. Therefore, in the calculation of PEA, these two are assigned their most usual case, 1 for *Cash* and 0 for *Mandatory*, instead of their sample average. The third explanatory variable, *ln(Deal value)*, is assigned the value of its sample average of 4.77.

V. Results and discussion

A. Pre-bid run-ups

Table VI – Development of CAAR and proportion of bids with positive CAR
The table reports the CAAR, the proportion of bids with a positive CAR, and the run-up index. All three variables are reported during a period of 30 trading days surrounding the announcement date of the takeover bids, starting at 20 trading days prior to announcement date.

Trading days before announcement (t)	CAAR(-60, t)[a]	T-statistic CAAR(-60, t) > 0	Proportion of bids with CAR(-60, t) > 0[b]	Run-up index
-60	(0.001)	(0.563)	0.449	(0.003)
…	…	…	…	…
-20	0.013	0.992	0.498	0.040
-19	0.015	1.168	0.520	0.047
-18	0.018*	1.373	0.520	0.057
-17	0.017	1.254	0.516	0.053
-16	0.016	1.201	0.516	0.050
-15	0.015	1.068	0.520	0.046
-14	0.016	1.164	0.520	0.051
-13	0.019*	1.333	0.538	0.060
-12	0.022*	1.517	0.524*	0.070
-11	0.025**	1.668	0.547*	0.080
-10	0.034**	2.144	0.560**	0.106
-9	0.033**	2.119	0.538**	0.104
-8	0.037***	2.346	0.547**	0.116
-7	0.041***	2.611	0.587***	0.129
-6	0.042***	2.659	0.582***	0.131
-5	0.049***	3.056	0.587***	0.155
-4	0.055***	3.406	0.591***	0.173
-3	0.060***	3.760	0.578***	0.189
-2	0.067***	4.017	0.609***	0.211
-1	0.076***	4.452	0.631***	0.240
0	0.319***	13.690	0.893***	1.000
1	0.320***	13.609	0.889***	1.003
2	0.320***	13.533	0.898***	1.001
3	0.317***	13.284	0.884***	0.993
4	0.317***	13.170	0.889***	0.992
5	0.319***	13.184	0.889***	0.999
6	0.319***	13.095	0.889***	0.998
7	0.315***	12.889	0.871***	0.987
8	0.315***	12.835	0.871***	0.987
9	0.315***	12.775	0.867***	0.989
10	0.314***	12.599	0.862***	0.983

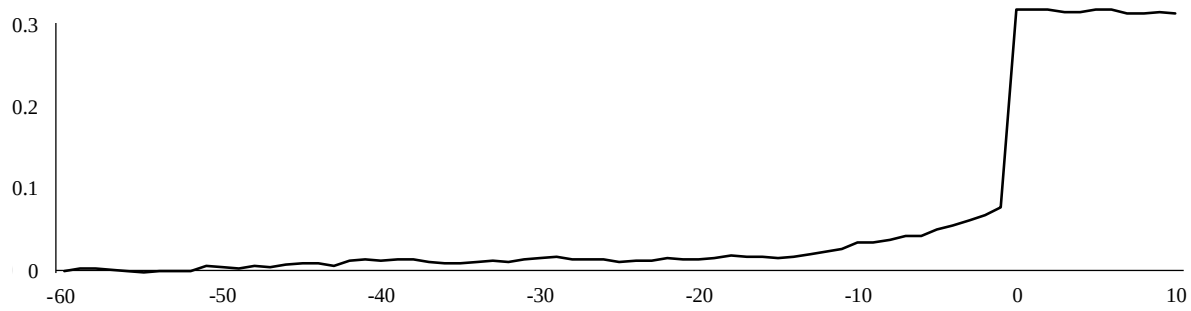
*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level ([a] one-sided t-test for CAAR greater than 0, [b] one-sided Wilcoxon Signed Rank test for proportions greater than 0.5) Run-up index equals CAAR(-60, t) / CAAR(-60, 0)*

As observed in table VI, the estimated pre-bid run-up, i.e. the CAAR(-60, -1), for the full sample is 7.6% and the CAAR during the full event window is 31.9%, both are statistically significant at the 1% level using a one-sided t-test. The table is limited to a window of [-20, 10] trading days around the zero date, as the CAAR during trading days in the window [-60, -21] is close to zero. The complete results for the event window are illustrated in figure II and can be found in appendix II. During the time span of 11 to 9 trading days prior to the zero date, the CAAR is positive and significant at a 5% level. Starting 8 trading days prior to the zero date, the CAAR is significant at a 1% level and remains significant throughout the event window. Similar results are observed when assessing the proportion of bids with positive CAR, which is 0.63 the trading day prior to announcement and 0.86 10 trading days after announcement. The proportion of

bids with CAR above zero is significantly greater than the expected 0.50 at a 5% level, using a one-sided Wilcoxon Signed Rank test, during the interval of 10 to 8 trading days prior to the zero date. Starting at 7 trading days prior to the announcement date, the proportion of bids is significant at a 1% level throughout the residual event window. The development of the proportion of bids with CAR above zero during the event window can be observed in figure III. To summarise, we find CAAR significantly greater than zero prior to the public announcement of the takeover bids in our sample, which leads us to reject the first research hypothesis.

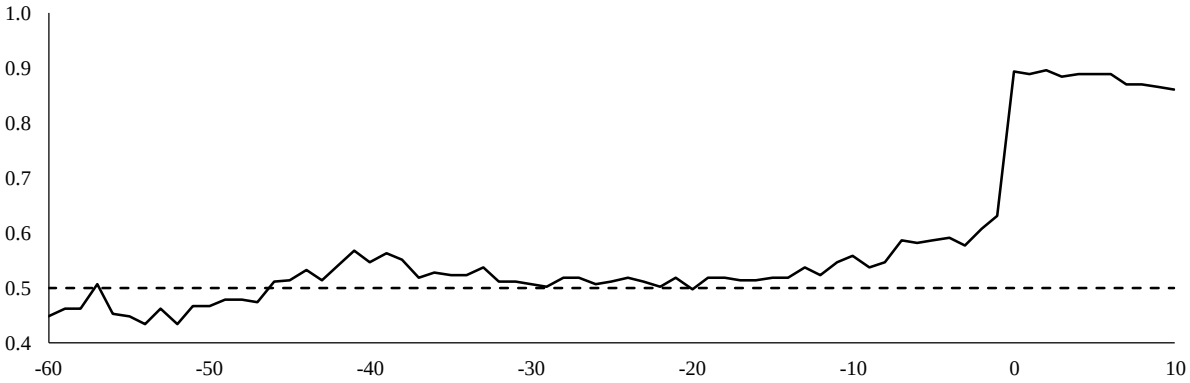
As seen in table VI, the average stock price reaction on the zero date is substantial, evidenced by the fact that the CAAR increases from 7.6% to 31.9%. This implies a run-up index of 24.0%, which means 24.0% of the total abnormal return occurs before the announcement date. During the window 1 to 10 trading days succeeding the zero date, the CAAR remains relatively constant at around 32.0%, implying an immediate reflection of the takeover bid announcement in the stock price. The proportion of CARs greater than zero follows a similar pattern as the CAAR, increasing from 0.63 to 0.89 on the zero date and then decreases marginally to reach 0.86 on the last trading day of the event window.

Figure II – Development of CAAR
The figure displays the development of the CAAR during the event window for the full sample.



Note: Y-axis represents CAAR, X-axis represents the number of trading days before the announcement date

Figure III – Development of proportion of bids with positive CAR
The figure displays the development of the proportion of bids with positive CAR during the event window for the full sample.



Note: Y-axis represents proportion of bids, X-axis represents the number of trading days before the announcement date. The dashed line represents the expected proportion from the null hypothesis of the Willcoxon Signed Rank Test

In line with Kleman and Wehtje (2009), we find support for the existence of pre-bid run-ups prior to the first announcement of public takeover bids on the Swedish equity markets. In comparison to their results of a total pre-bid run-up of 8.8% and a total CAAR including the announcement date of 31.2%, our results of 7.6% and 31.9% are similar. Our results are significant at a 1% level 8 trading days prior to the zero date, whereas their results are significant 5 trading days prior to the announcement. Our result for the pre-bid run-up of 7.6% is in the lower range when compared to previous studies in other countries, which range between 5.7% (King and Padalko, 2005) and 13.3% (Keown and Pinkerton, 1981). However, our result for the total CAAR including the zero date of 31.9% is higher than what has been found by studies in other countries, that lie within the range of 17.5% (King and Padalko, 2005) and 30.6% (Meulbroek, 1992). The combination of a low pre-bid run-up with a high total CAAR including the zero date leads to a relatively low run-up index of 24.0% in our study, compared to the run-up index of approximately 50% found by Keown and Pinkerton (1981), Jensen and Ruback (1983), Jarrell and Poulsen (1989), and Meulbroek (1992).

As the two explanations found in previous research include insider information leakage as a potential driver of pre-bid run-ups, the existence of pre-bid run-ups support the idea that it potentially exists leakage of insider information prior to the announcement of public takeover bids. Therefore, our findings of pre-bid run-ups indicate that there on average exists issues with information leakage and that this leakage is prominent enough to be an important driver of abnormal returns prior to the announcement date. However, the source of insider information leakage is not evident as there normally is a vast amount of people with information of a bid prior to the announcement date.

B. Pre-bid run-ups per M&A advisor

Table VII – Summary statistics and t-test per group of M&A advisors
The table reports the CAAR per group, the proportion of bids with a pre-bid run-up per group, and the difference in CAAR(-60, -1) between groups containing an advisor with a relatively large estimated corporate network, compared to groups containing an advisor with a relatively small estimated corporate network.

Group	Number of takeover bids	Median deal value (EURm)	Proportion of bids with pre-bid run-up	CAAR (-60, -1)	Difference in CAAR(-60, -1)
Large M&A advisors (*Large*)	23	859	0.913	0.183	0.119**
Other M&A advisors (*Non-Large*)	202	89	0.599	0.064	[2.125]
Large international investment banks (*LIIB*)	39	596	0.872	0.179	0.123***
Other M&A advisors (*Non-LIIB*)	186	70	0.581	0.055	[2.894]
Full sample	225	126	0.630	0.076	

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a one-sided t-test for difference in group means*
T-statistics for difference in group means are reported in brackets below the difference in CAAR(-60, -1)

Table VII reports summary statistics and t-test results for the groups created using the two methods described in Section IV. *Data and methodology* for proxying the relative size of each M&A advisors' corporate network. The CAAR(-60, -1) for the *Large* group is 18.3%, in comparison to 6.4% for the other M&A advisors, yielding a difference of 11.9 percentage points significant at the 5% level. This means that the average pre-bid run-up in takeover bids where a *Large* advisor is hired by the bidder is significantly greater than in bids without a *Large* advisor present. The result is similar for the *LIIB* group, which has a 12.3 percentage points greater CAAR(-60, -1) than the *Non-LIIB* group, and significant at the 1% level. Both the *Large* and *LIIB* group exhibit larger proportions of bids with pre-bid run-up, 0.91 and 0.87 compared to the other takeover bids in the sample with 0.60 and 0.58 respectively.

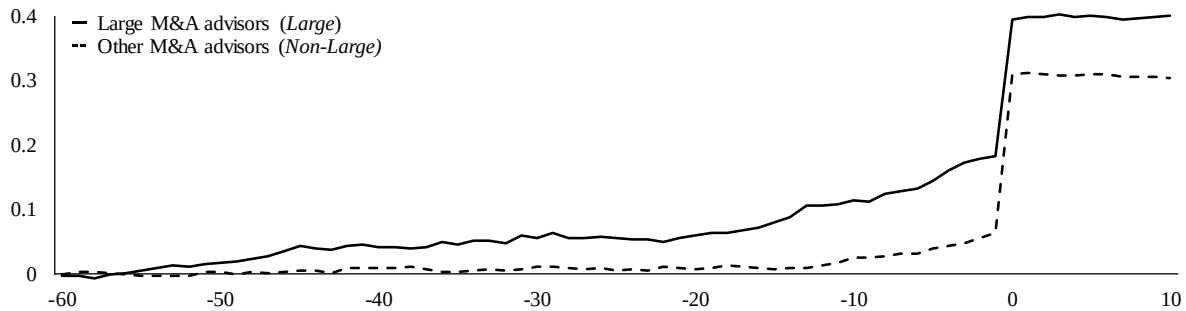
The individual M&A advisors represented in the groups are shown in appendix III, together with their respective summary statistics. The median deal value varies across the M&A advisors, ranging from EUR 22 million to more than EUR 2.5 billion. Likewise, the CAAR(-60, -1) per M&A advisor is dispersive and ranges from (14.4%) to 40.8%. 10 of the 20 most active M&A advisors are involved in bids with an average CAR(-60, -1) significantly greater than zero at least at the 10% level. However, the number of bids per advisor varies a lot between the advisors in each group, leading to a reduced power of the t-test for some advisors and thus it is difficult to draw any adequate conclusions from it. Similar results are obtained when assessing the proportion of bids per M&A advisor with CAR(-60, -1) greater than 0. Considering the top 20 most active M&A advisors as a group, the CAAR(-60, -1) is 8.9%, versus 7.6% for the full sample.

Table VIII – Development of CAAR for the *Large* and *Non-Large* group
The table reports the development of the CAAR for the *Large* and the *Non-Large* groups of takeover bids as well as the difference between the two groups for each day during the 30 trading days surrounding the announcement date of the takeover bids, starting at 20 trading days prior to the announcement date.

Trading days before announcement (t)	CAAR(-60, t) *Large* [a]	CAAR(-60, t) *Non-Large* [a]	Difference in CAAR(-60, t)[b]	T-statistic, difference in CAAR(-60, t)
-60	(0.004)	(0.001)	(0.003)	(0.646)
…	…	…	…	…
-20	0.060**	0.007	0.052*	1.666
-19	0.064**	0.009	0.054**	1.717
-18	0.063**	0.013	0.050*	1.461
-17	0.067**	0.011	0.056*	1.589
-16	0.072**	0.010	0.062**	1.823
-15	0.079***	0.007	0.071**	2.072
-14	0.087***	0.008	0.079**	2.108
-13	0.106**	0.009	0.097**	1.985
-12	0.106**	0.013	0.092**	1.943
-11	0.107**	0.016	0.091**	1.921
-10	0.114**	0.025*	0.090**	1.824
-9	0.112**	0.024*	0.087**	1.776
-8	0.123***	0.027*	0.096**	1.949
-7	0.127**	0.031**	0.096**	1.755
-6	0.132***	0.032**	0.101**	1.887
-5	0.145***	0.038**	0.106**	1.918
-4	0.161***	0.043***	0.118**	2.039
-3	0.173***	0.048***	0.125**	2.205
-2	0.178***	0.055***	0.123**	2.184
-1	0.183***	0.064***	0.119**	2.125
0	0.394***	0.311***	0.083	1.190
1	0.398***	0.311***	0.087	1.231
2	0.400***	0.310***	0.089	1.256
3	0.403***	0.307***	0.096*	1.329
4	0.399***	0.307***	0.092	1.267
5	0.401***	0.309***	0.091	1.257
6	0.399***	0.309***	0.090	1.227
7	0.395***	0.306***	0.090	1.210
8	0.396***	0.306***	0.091	1.224
9	0.399***	0.306***	0.093	1.251
10	0.400***	0.304***	0.096	1.275

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a ([a] one-sided t-test for CAAR greater than 0 and [b] one-sided t-test for difference in group means)*

Figure IV – Development of CAAR for the *Large* and *Non-Large* group
The figure displays the development of CAAR for the *Large* and *Non-Large* groups during the event window.



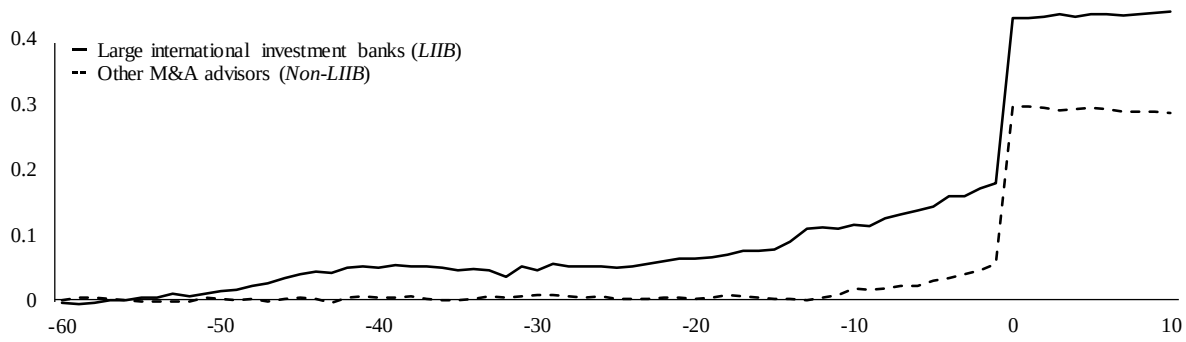
Note: Y-axis represents CAAR, X-axis represents the number of trading days before the announcement date

Table IX – Development of CAAR for the *LIIB* and *Non-LIIB* group
The table reports the development of the CAAR for the *LIIB* and the *Non-LIIB* groups of takeover bids as well as the difference between the two groups for each day during the 30 trading days surrounding the announcement date of the takeover bids, starting at 20 trading days prior to the announcement date.

Trading days before announcement (t)	CAAR(-60, t) *LIIB*[a]	CAAR(-60, t) *Non-LIIB*[a]	Difference in CAAR(-60, t)[b]	T-statistic, difference in CAAR(-60, t)
-60	(0.005)	0.000	(0.005)	(1.231)
…	…	…	…	…
-20	0.064***	0.002	0.061**	2.064
-19	0.066***	0.004	0.061**	2.045
-18	0.068***	0.007	0.061**	1.999
-17	0.075***	0.005	0.070**	2.246
-16	0.076***	0.003	0.072**	2.365
-15	0.078***	0.001	0.077***	2.500
-14	0.090***	0.001	0.089***	2.796
-13	0.109***	0.000	0.109***	2.911
-12	0.111***	0.004	0.107***	2.688
-11	0.109***	0.008	0.100***	2.643
-10	0.116***	0.017	0.099***	2.599
-9	0.113***	0.016	0.097***	2.494
-8	0.125***	0.018	0.107***	2.789
-7	0.132***	0.022*	0.109***	2.732
-6	0.136***	0.022	0.114***	2.925
-5	0.143***	0.030**	0.113***	2.787
-4	0.160***	0.033**	0.126***	3.009
-3	0.159***	0.040**	0.120***	2.871
-2	0.171***	0.046***	0.125***	2.940
-1	0.179***	0.055***	0.123***	2.894
0	0.432***	0.295***	0.136***	2.671
1	0.432***	0.296***	0.136***	2.650
2	0.435***	0.295***	0.139***	2.698
3	0.438***	0.291***	0.146***	2.820
4	0.434***	0.292***	0.142***	2.704
5	0.438***	0.294***	0.144***	2.739
6	0.439***	0.293***	0.145***	2.735
7	0.437***	0.289***	0.147***	2.746
8	0.438***	0.289***	0.149***	2.761
9	0.440***	0.289***	0.151***	2.780
10	0.443***	0.287***	0.156***	2.829

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a ([a] one-sided t-test for CAAR greater than 0 and [b] one-sided t-test for difference in group means)*

Figure V – Development of CAAR for *LIIB* and *Non-LIIB* group
The figure displays the development of CAAR for the *LIIB* and *Non-LIIB* groups during the event window.



Note: Y-axis represents CAAR, X-axis represents the number of trading days before the announcement date

The entire development of the CAAR per M&A advisor group during the event window can be observed in figure IV and V for the *Large* and the *LIIB* group respectively. The underlying data for the figures can be found in appendix IV and V, and table VIII and IX are shortened versions of the results starting at 20 trading days prior to announcement. Table VIII shows that the CAAR for the *Large* group is significantly greater than the CAAR for the *Non-Large* group at a 5% level around 20 trading days prior to announcement and remains significant at this level until announcement day. Table IX displays the CAAR for the *LIIB* group, which is significantly greater than the CAAR for the *Non-LIIB* group at the 1% level already at 20 trading days prior to announcement and remains significantly greater throughout the event window at the 1% level. As can be seen in appendix IV and V respectively, the differences are significant at the 10% level as early as around 45 trading days prior to announcement day. Similar results are achieved for the development of proportion of bids with positive CAR per group during the event window, which is displayed in Appendix VI.

Table X – Regression outputs per M&A advisor group
The table reports the estimated coefficients and their respective standard errors for equation XIV and equation XV using OLS regression. The year dummies are excluded from the table.

Variable	Equation XIV	Equation XV
Large M&A advisors (*Large*)	0.123** [0.065]	
Large international investment banks (*LIIB)*		0.125*** [0.053]
Cash	0.062 [0.049]	0.056 [0.049]
ln(Deal value)	(0.006) [0.011]	(0.009) [0.012]
Mandatory	(0.023) [0.053]	(0.017) [0.054]
Constant	0.035 [0.115]	0.055 [0.115]
Number of observations	225	225
Adjusted R^2	0.069	0.078

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a one-sided coefficient test. Standard errors of estimated coefficients are presented in brackets below the coefficient estimate. A full table including year dummies can be found in appendix VII*

As shown in table X, the differences in average pre-bid run-up per M&A advisor group remain significant when controlling for the chosen bid characteristics. None of the control variables is significant, and the estimated coefficients for *Large* and *LIIB* remain positive as well as significant at a 5% and 1% level respectively. The estimated coefficients for *Large* and *LIIB* are 0.123 and 0.125 respectively, implying an average increase of 12.3 and 12.5 percentage points in the CAR(-60, -1) when an M&A advisor from the *Large* and *LIIB* groups is present as bidder M&A advisor. Equation XIV and XV both include year dummies, which are not displayed in table X but can be found in appendix VII. For equation XIV and XV, the adjusted

R^2 is 0.069 and 0.078 respectively, which is arguably low. Although this implies that a majority of the CAR(-60, -1) is unexplained in both equation XIV and XV, our ultimate goal is not to explain the CAR(-60, -1), but rather to examine if the involvement of an M&A advisor from either of the groups have a significant impact on the magnitude of the CAR(-60, -1). With this in mind, a low adjusted R^2 does not harm the conclusions of the study and is hence acceptable. Based on our findings of significantly greater pre-bid run-ups in takeover bids where an M&A advisor with a large corporate network is advising the bidder, we reject our second research hypothesis.

The previously mentioned results imply that the size of the corporate network has an impact on the magnitude of the pre-bid run-ups through increased risk of insider information leakage. These results are in line with the findings by Acharya and Johnson (2010) that information leakage prior to takeover bids by private equity firms can be attributed to the involved firms' corporate networks. This implies that if the size of the corporate network is large, the risk of insider information leakage is higher, which means that there is a difference in risk of leakage among the different groups of M&A advisors, as these have different relative sizes of their corporate networks. This is in line with the findings by Chang et al. (2016) about the importance of insider information leakage risk in the choice of M&A advisor.

It might be the case that the significant differences in pre-bid run-ups between the groups can be attributed to some omitted variable, i.e. some characteristic of the type of takeover bids where *Large* and *LIIB* advisors are hired that we do not capture in our regressions but that nonetheless is an important driver of pre-bid run-ups. An example of such a characteristic could be that the *Large* and *LIIB* advisors tend to work on deals with a large number of people involved, and thus it is the number of people working on the deal, rather than the corporate network of the M&A advisor, that drives the pre-bid run-up. However, deals with a large number of people involved are generally also large in size, which is an effect we control for. Further, Jensen and Ruback (1983) argue that sophisticated investors have the ability to anticipate an upcoming bid, which implies that if there is a difference between the groups in the average number of investors trying to anticipate the takeover bids in the groups, these might drive our results. However, the number of sophisticated investors analysing a potential target should be correlated with the size of the target. Therefore, these mentioned effects, as well as other similar effects, should be captured by the *ln(Deal value)* variable.

The significant differences in pre-bid run-ups might be a result of some other characteristic of the M&A advisors in the *Large* and *LIIB* groups than the size of their corporate network. For

example, Jarrell and Poulsen (1989) argue that the restricted list at investment banks are an apparent source feeding street talk and media rumours. This means that if the M&A advisors in the *Large* and *LIIB* groups have a different approach to managing the restricted lists, or similar internal control mechanisms, compared to the M&A advisors in the *Non-Large* and *Non-LIIB* groups, these mechanisms might be important factors driving our results. Further, as Sanders and Zdanowicz (1992) explain, as more people have access to private information about the takeover bid, it becomes increasingly difficult to determine whether the information is private or public. Based on this, potential differences between the groups in terms of the number of people who internally gain access to private information might also be an important factor. We do not control for any of these above-mentioned characteristics as this is beyond the scope of this paper, and information about internal routines is likely inaccessible. However, if one of these characteristics have material impact, although weakening the idea that the results are attributable to the size of the M&A advisor's corporate network, it would still provide support for the main idea that the risk of information leakage is an important variable in explaining pre-bid run-ups.

Moreover, Bodnaruk et al. (2009) and Griffin et al. (2012) find that M&A advisors exploit private information either through taking positions themselves or leaking to connected individuals. As all the M&A advisors in the *Large* and *LIIB* groups provide asset management services it could be that our results are an effect of the *Large* and *LIIB* advisors exploiting private information for their own benefit. However, as Minenna (2003) argues, identifying insider trading solely based on econometric techniques is a difficult task, we choose not to address this issue directly in this study. As a result, we cannot assess anything related to the M&A advisor's potential role with respect to the specific trades that drive the pre-bid run-ups. However, if the M&A advisors actually exploit private information for their own benefit, and differences in the degree of exploitation between the groups in fact drive our results, it would provide support for the idea that the characteristics of the M&A advisor is an important factor influencing the magnitude of the pre-bid run-ups, although through a different mechanism than leakage.

VI. Robustness tests

A. Pre-bid run-ups

Table XI – Results of robustness tests
The table reports the characteristics of each robustness test of CAAR as well as the pre-bid run-up, total CAAR including the announcement date, and run-up index for each robustness test

Robustness test No.	Estimation technique	Estimation window	Event window	CAAR (-60 , -1)	CAAR (-60 , 0)	Run-up index
1	Market model	[-250, -31]	[-30, 10]	0.062***	0.304***	0.204
2	Market model	[-500, -61]	[-60, 10]	0.071***	0.313***	0.227
3	FF3 model	[-250, -61]	[-60, 10]	0.087***	0.333***	0.261
4	FF3 model	[-500, -61]	[-60, 10]	0.079***	0.324***	0.244
5	Constant mean return model	[-250, -61]	[-60, 10]	0.078***	0.321***	0.243
6	Constant mean return model	[-500, -61]	[-60, 10]	0.067***	0.310***	0.216
Main test	Market model	[-250, -61]	[-60, 10]	0.076***	0.319***	0.240

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a one-sided t-test for CAAR greater than 0. Run-up index equals CAAR(-60, -1) / CAAR(-60, 0)*

As shown in table XI, the results for CAAR(-60, -1) and CAAR(-60, 0) are robust when altering the estimation technique and length of the windows. The full development of CAAR per trading day and the development of takeover bids with positive CAR are displayed in appendix VIII and IX respectively. The robustness results for CAAR(-60, -1) and CAAR(-60, 0) are all within close proximity to the main result and all six are significant at the 1% level. The run-up index for all six robustness tests ranges from 20.4% to 26.1%. The results from the robustness tests indicate that the results are not sensitive to the chosen method.

B. Pre-bid run-ups per M&A advisor

Table XII – Probit model output per M&A advisor group
The table reports the estimated coefficients for equation XXI and XXII using a maximum likelihood function via a probit regression. Further, the table shows the marginal impact of the variables on the dependent variable measured as the partial effect at the average ("PEA").

Variable	Equation XXI		Equation XXII	
	Coefficients	PEA	Coefficients	PEA
Large M&A advisors (*Large*)[a]	0.741** [0.407]	0.224		
Large international investment banks (*LIIB*)[a]			0.650** [0.301]	0.208
Cash[b]	0.073 [0.238]	0.027	0.054 [0.239]	0.021
Mandatory[b]	(0.418)* [0.251]	(0.163)	(0.398) [0.252]	(0.157)
ln(Deal value)[b]	0.123** [0.057]	0.045	0.109* [0.058]	0.040
Constant[b]	(0.297) [0.341]	n.m.	(0.253) [0.343]	n.m.
Number of observations	225		225	

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a ([a] one-sided coefficient test, [b] two-sided coefficient test). Standard errors of estimated coefficients are presented in brackets below the coefficient estimate*

Table XII reports the results from the two probit models, equation XXI and XXII. The *Large* and *LIIB* variables are both positive and significant at the 5% level, which indicates that the results from equation XIV and XV are not sensitive to the new conditions of the robustness tests. The estimated probability of observing a pre-bid run-up is 22.4 percentage points higher, measured as the PEA, when a *Large* advisor is advising the bidder, compared to the *Non-Large* cases. The equivalent figure for the *LIIB* group is 20.8 percentage points, which indicates that both groups exhibit similar increase in probability of observing a pre-bid run-up compared to *Non-Large* and *Non-LIIB* respectively.

There are two notable differences in the results of equation XXI and XXII compared to equation XIV and XV respectively. First, the *Mandatory* variable in equation XXI is negative and significant at the 10% level, with an estimated PEA of negative 16.3 percentage points. This means that the probability of observing a run-up in a mandatory bid is 16.3 percentage points lower than in non-mandatory bids. As previously discussed, the dynamics of a mandatory bid can be different from non-mandatory bids, which likely causes the negative estimated PEA for *Mandatory*. The second difference is that *ln(Deal value)* is now positive and significant at the 5% and 10% level for equation XXI and XXII respectively. These results are consistent with the reasoning by Acharya and Johnson (2010) about that larger deals involve more people leading to the belief that large deals means more information leakage. The estimated PEA of *ln(Deal value)* is 4.5 and 4.0 percentage points in equation XXI and XXII respectively.

VII. Conclusions

A. Conclusions from the study

Previous work on pre-bid run-ups has emphasised two explanations. The first is the market anticipation hypothesis, which builds upon the idea that pre-bid run-ups are merely a reflection of public information that increases the likelihood of a takeover bid. The second is the illegal insider leakage hypothesis which argues pre-bid run-ups are a result of either insider trading or information leakage to third parties. Although previous work is inconclusive regarding the most suitable theory, both theories emphasise leakage of insider information as an influential component for pre-bid run-ups. Further, it has been shown that providing M&A advisors with insider information poses a significant leakage risk and that the corporate network of firms involved in public takeover bids matter for the degree of illegal exploitation of insider information. Using a sample of 225 public takeover bids, we first measure pre-bid run-ups on the Swedish equity markets between 1999 and 2017. We then investigate whether the magnitude of pre-bid run-ups vary with the relative size of the corporate network of the bidder's M&A advisor.

We find positive and significant pre-bid run-ups in our sample, of a magnitude that is similar to that found in previous work on Sweden and smaller than that found in other countries. The implication is that there are still informed investors who take advantage of uninformed investors by exploiting private information. We also find significantly larger pre-bid run-ups for bids in which M&A advisors with a relatively large estimated corporate network advise the bidder.[7] There are three possible conclusions from these results.

First, there could be some characteristics unrelated to the choice of M&A advisor but common to the type of takeover bids that *Large* and *LIIB* advisors work on. If these characteristics are important for pre-bid run-ups, they would lead us to conclude that the size of the corporate network of the M&A advisor matters for pre-bid run-ups, although there are other effects causing our results. We do however believe that we should have captured those potential effects in our control variables and robustness tests, and we thus conclude that there is an effect attributable to the M&A advisor.

[7] Further, as shown in our robustness tests for pre-bid run-ups per M&A advisor, the presence of an M&A advisor with a large corporate network does not only increase the magnitude of the pre-bid run-up, but also the probability of observing one

Second, it might be that the M&A advisors exploit the private information for their own benefit, and that it is their own actions that cause these results. We do however not perform any tests or analyses related to this fact as it is beyond the scope of this study. Nonetheless, if this is true, the implications would be that well-known M&A advisors systematically engage in illegal exploitation of insider information. However, we consider it to be highly unlikely that this behaviour would remain undetected without reprisals for a sustained period of time.

The third and final conclusion is that the size of the M&A advisor's corporate network matters for the magnitude of pre-bid run-ups, which we argue is a result of two mechanisms. First, a larger size of their corporate network implies that more people gain access to the information on a legitimate basis when contacted as e.g. potential co-financiers, legal experts, or consultants on the bid. Second, it might be that the M&A advisors leak the information to firms with whom they have a long-standing relationship with, and the larger such a network is the greater the effect of such a leak. We believe that both these effects might be at play, and thus could explain why we find significantly greater pre-bid run-ups in bids where an advisor from one of our two advisor groups is hired. To conclude, we attribute our results regarding the second hypothesis to information leakage through the corporate network of the M&A advisor involved in the public takeover bid. With the previous reflections in mind, we argue that insider information leakage is an important factor with respect to the presence of pre-bid run-ups.

B. Limitations and suggestions for future research

Previous studies on pre-bid run-ups in the context of the size of corporate network of the involved parties, especially with respect to the M&A advisor, is scarce. This introduces the difficulty of a direct comparison of the results related to pre-bid run-ups per M&A advisor in our study with the field of previous research. What further impedes the comparison to other studies is the fact that we exclude volume dynamics, which is something that in conjunction with competitive trading models have been utilised to establish which explanation for pre-bid run-ups is most valid. However, as we do not try to decide what explanation is deemed to be the correct one, we see no issues in this demarcation.

Due to the lack of accessibility to appropriate trading data, an analysis of price behaviour with respect to specific trades conducted by parties within the corporate network of the M&A advisor is difficult and has not been emphasised in this study. Likewise, even though it is difficult to identify a pertinent measure for the size of the corporate network of the M&A advisor, it is nevertheless possible to argue that the proxy for the size of the corporate network applied in this study is inadequate.

There are several compelling perspectives we suggest for future research that would efficiently complement this study. The first would be to focus on actual cases of known insider information leakage to examine the dynamics of information leakage and more specifically, to assess where the insider information leakage originates from. The second would be to analyse other measurable sources for information leakage to establish whether they have a significant role in explaining pre-bid run-ups. The third would be to examine M&A advisor's internal routines for private information and if the presence of a difference among advisors of such routines drive the magnitude of pre-bid run-ups. On a general basis, we introduce the importance of considering the impact of M&A advisors in the analysis of pre-bid run-ups.

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IX. Appendix

A. Appendix I: List of takeover bids in the sample

The table reports characteristics of each public takeover bid used in the sample.

Event No.	Target Company	Target Company Industry	Announcement Date	Deal Value (EURm)	Mandatory Offer	Deal Structure	CAR (-60, -1)
1	Melker Schorling AB	Financial Services	2017-11-14	512	Yes	Cash	3.81%
2	Avega Group AB	Computer services	2017-10-23	44	No	Cash	33.22%
3	DGC One AB	Telecommunications: Carriers	2017-06-07	243	Yes	Cash	8.02%
4	Elverket Vallentuna AB	Energy	2017-05-19	60	No	Cash	(1.75%)
5	Bringwell AB	Consumer: Retail	2017-05-15	26	No	Cash	(5.76%)
6	Caperio Holding AB	Computer services	2017-04-27	9	No	Cash	10.79%
7	Vigmed Holding AB	Medical	2017-02-27	9	No	Cash	2.63%
8	Transcom WorldWide AB	Services (other)	2016-12-21	200	No	Cash	8.22%
9	Matse Holding AB	Internet / ecommerce	2016-12-15	52	No	Cash	37.17%
10	Nordic Camping & Resort AB	Leisure	2016-11-10	30	No	Cash	(6.50%)
11	Nordnet AB	Financial Services	2016-10-25	225	No	Cash	6.19%
12	RusForest AB	Agriculture	2016-10-24	20	Yes	Cash	9.77%
13	Arcam AB	Industrial products and services	2016-09-06	596	No	Cash	(34.06%)
14	D. Carnegie & Co AB	Real Estate	2016-07-15	262	Yes	Cash	14.39%
15	Haldex AB	Automotive	2016-07-14	467	No	Cash	28.58%
16	Vivoline Medical AB	Medical	2016-04-18	10	No	Cash	54.54%
17	Meda AB	Medical: Pharmaceuticals	2016-02-11	8,844	No	Cash	(3.99%)
18	Allenex AB	Medical	2015-12-16	43	No	Cash	(6.37%)
19	Industrial & Financial Systems AB	Computer software	2015-11-30	959	Yes	Cash	11.89%
20	Proffice AB	Services (other)	2015-11-30	184	No	Cash	(2.25%)
21	Cybercom Group AB	Computer services	2015-11-02	34	No	Cash	11.66%
22	EXINI Diagnostics AB	Computer software	2015-10-13	6	No	Cash	22.61%
23	Tribona AB	Real Estate	2015-09-18	523	No	Cash	0.90%
24	Hemtex AB	Consumer: Retail	2015-08-25	34	No	Cash	(7.86%)
25	AB Geveko	Chemicals and materials	2015-06-22	71	Yes	Cash	(15.65%)
26	Aerocrine AB	Medical	2015-05-15	171	No	Cash	105.43%
27	Nordic Service Partners Holding AB	Leisure	2015-04-15	34	No	Cash	(17.76%)
28	Transmode Holding AB	Telecommunications: Hardware	2015-04-09	354	No	Cash	21.21%
29	H1 Communication AB	Services (other)	2015-03-10	2	No	Cash	12.22%
30	Axis AB	Industrial products and services	2015-02-10	2,060	No	Cash	1.94%
31	Aspiro AB	Computer software	2015-01-30	40	No	Cash	13.06%
32	DIBS Payment Services AB	Services (other)	2014-10-29	83	No	Cash	(20.23%)
33	Agrokultura AB	Agriculture	2014-08-07	63	Yes	Cash	24.82%
34	ACAP Invest AB	Manufacturing (other)	2014-06-26	16	No	Cash	(45.21%)
35	Connecta AB	Services (other)	2014-06-09	59	No	Share	4.10%
36	Availo Networks AB	Internet / ecommerce	2014-05-13	63	No	Cash	15.70%
37	Readsoft AB	Computer software	2014-05-06	180	No	Cash	1.76%
38	Rorvik Timber AB	Agriculture	2014-04-16	146	Yes	Cash	(6.40%)
39	Hedson Technologies International AB	Industrial products and services	2014-04-01	14	No	Cash	23.96%
40	Cryptzone Group AB	Computer software	2014-02-21	9	No	Cash	(24.60%)
41	Scania AB	Automotive	2014-02-24	6,660	No	Cash	13.76%
42	Cision AB	Computer software	2014-02-14	131	No	Cash	13.70%
43	Probi AB	Biotechnology	2014-01-10	7	Yes	Cash	(5.26%)
44	Trygga Hem Skandinavien AB	Industrial products and services	2013-06-17	22	No	Cash	(15.15%)
45	Isconova AB	Medical: Pharmaceuticals	2013-06-04	17	No	Share	20.01%
46	Sigma AB	Computer software	2013-02-20	58	No	Cash	3.89%
47	Hoganas AB	Industrial products and services	2013-02-11	1,412	No	Cash	8.11%
48	Note AB	Industrial products and services	2012-12-03	33	No	Cash	(9.03%)
49	Rottneros AB	Manufacturing (other)	2012-11-07	26	No	Cash	12.11%
50	Avonova Halsa AB	Medical	2012-10-15	19	No	Cash	(14.26%)
51	Brinova Fastigheter AB	Real Estate	2012-05-16	562	No	Cash	(14.33%)
52	Jeeves Information Systems AB	Computer services	2012-03-26	25	No	Cash	14.50%
53	Capilon AB	Financial Services	2012-02-17	16	No	Cash	49.08%
54	Aspiro AB	Internet / ecommerce	2012-01-12	19	No	Cash	(5.95%)
55	Itiviti AB	Computer software	2011-12-19	224	No	Cash	42.78%
56	Dagon AB	Real Estate	2011-12-06	558	No	Cash	(4.68%)
57	Resurs Bemanning Cnc AB	Services (other)	2011-11-30	4	No	Cash	(32.25%)
58	Seco Tools AB	Industrial products and services	2011-11-07	848	No	Share	(3.54%)
59	ElektronikGruppen BK AB	Industrial: Electronics	2011-06-22	26	No	Cash	(19.89%)
60	Iptor Supply Chain Systems AB	Computer software	2011-05-17	20	No	Cash	22.54%
61	Niscayah Group AB	Industrial products and services	2011-05-16	763	No	Share	1.94%
62	Entraction Holding AB	Leisure	2011-05-05	61	No	Cash	22.54%
63	Tretti AB	Internet / ecommerce	2011-04-28	34	No	Cash	(10.91%)
64	BioPhausia AB	Medical: Pharmaceuticals	2011-04-11	70	No	Cash	27.90%
65	SaekI AB	Financial Services	2011-03-17	398	No	Share	5.72%

Appendix I - Continued

Event No.	Target Company	Target Company Industry	Announcement Date	Deal Value (EURm)	Mandatory Offer	Deal Structure	CAR (-60, -1)
66	NetOnNet AB	Consumer: Retail	2010-12-27	30	Yes	Cash	(33.73%)
67	Cardo AB	Industrial products and services	2010-12-13	1,245	No	Cash	5.19%
68	Q-MED AB	Medical	2010-12-13	800	No	Cash	(14.50%)
69	Biolin Scientific AB	Biotechnology	2010-11-29	30	No	Cash	(4.51%)
70	Modul 1 Data AB	Services (other)	2010-09-27	7	No	Cash	6.65%
71	Scanworld TravelPartner AB	Leisure	2010-09-20	30	No	Cash	(13.38%)
72	Munters Group AB	Industrial products and services	2010-09-06	686	No	Cash	23.54%
73	HL Display AB	Consumer: Other	2010-06-02	108	Yes	Cash	(10.37%)
74	AcadeMedia AB	Services (other)	2010-04-28	333	No	Cash	7.16%
75	Tilgin AB	Computer software	2010-02-22	6	Yes	Cash	3.64%
76	Tricorona AB	Financial Services	2010-02-10	109	No	Share	(31.93%)
77	Neonet Securities AB	Financial Services	2010-01-25	124	No	Share	(14.04%)
78	Ticket Travel Group AB	Leisure	2010-01-05	16	Yes	Cash	(68.12%)
79	Ledstiernan AB	Financial Services	2009-11-30	6	no	Cash	8.48%
80	Skanditek Industrifoervaltning AB	Financial Services	2009-10-14	185	No	Share	24.19%
81	Din Bostad Sverige AB	Real Estate	2009-06-26	445	No	Share	18.37%
82	Hemtex AB	Consumer: Retail	2009-04-29	59	Yes	Cash	35.27%
83	Carl Lamm Holding AB	Computer services	2009-04-17	63	No	Cash	(16.73%)
84	Wayfinder Systems AB	Computer software	2008-12-09	20	No	Cash	(52.37%)
85	Peab Industri AB	Construction	2008-11-10	573	No	Share	(48.22%)
86	Q-MED AB	Biotechnology	2008-11-03	374	No	Cash	40.61%
87	Teleca AB	Computer services	2008-11-03	37	Yes	Cash	20.32%
88	Strand Interconnect AB	Computer: Semiconductors	2008-10-16	4	No	Share	(11.10%)
89	Arena Personal AB	Services (other)	2008-09-30	16	No	Cash	14.98%
90	Brostrom AB	Transportation	2008-08-27	776	No	Cash	34.90%
91	VLT AB	Internet / ecommerce	2008-08-01	56	Yes	Cash	(10.53%)
92	Gunnebo Industrier AB	Industrial products and services	2008-07-22	250	No	Cash	19.89%
93	Iptor Supply Chain Systems AB	Computer software	2008-06-30	88	Yes	Cash	(39.80%)
94	Fazer Konfektyr Service AB	Consumer: Foods	2008-06-16	217	No	Cash	(7.82%)
95	Kontakt East Holding AB	Media	2008-05-26	19	No	Cash	(10.53%)
96	Zodiac Television AB	Media	2008-05-26	169	No	Cash	17.13%
97	Ballingslov International AB	Consumer: Other	2008-05-16	87	Yes	Cash	(6.99%)
98	Cision AB	Media	2008-04-30	232	No	Cash	(12.92%)
99	Sigma AB	Computer services	2008-03-28	82	No	Cash	10.44%
100	XPonCard Group AB	Computer: Semiconductors	2008-02-19	91	No	Cash	14.68%
101	Boss Media AB	Computer software	2008-02-01	112	No	Cash	22.76%
102	ONE Media Holding AB	Media	2008-01-17	14	No	Cash	(8.79%)
103	Human Care HC AB	Medical	2008-01-14	5	No	Cash	(5.21%)
104	Gymgrossisten Nordic AB	Consumer: Retail	2007-12-14	21	No	Cash	(18.34%)
105	Gant AB	Consumer: Other	2007-12-11	533	No	Cash	2.72%
106	Verisure Holding AB	Industrial products and services	2007-11-13	859	No	Cash	35.38%
107	KMT Group AB	Industrial products and services	2007-10-29	119	No	Cash	(42.83%)
108	AcadeMedia AB	Services (other)	2007-10-22	48	Yes	Cash	(26.98%)
109	Ark Travel AB	Leisure	2007-10-22	26	No	Cash	25.18%
110	Cell Network AB	Computer services	2007-10-08	51	No	Cash	(1.91%)
111	Elverket Vallentuna AB	Energy	2007-09-25	32	No	Cash	(0.73%)
112	All Cards Service Center ACSC AB	Consumer: Other	2007-09-24	20	No	Share	(1.03%)
113	Nefab AB	Manufacturing (other)	2007-08-27	136	No	Cash	1.95%
114	SalusAnsvar AB	Services (other)	2007-08-20	80	No	Cash	14.01%
115	Lindex AB	Consumer: Other	2007-08-13	862	No	Cash	14.07%
116	Goodtech Intressenter AB	Industrial products and services	2007-06-14	32	No	Cash	(13.61%)
117	Telelogic AB	Computer software	2007-06-11	544	No	Cash	59.04%
118	OMX AB	Financial Services	2007-05-25	2,996	No	Cash	29.42%
119	Moderna Finance AB	Financial Services	2007-04-26	601	No	Cash	22.42%
120	Inwarehouse AB	Internet / ecommerce	2007-03-23	16	No	Cash	(5.97%)
121	Sardus AB	Consumer: Foods	2007-02-19	204	Yes	Cash	33.12%
122	Pergo AB	Construction	2007-01-15	330	No	Cash	(24.04%)
123	Tradedoubler AB	Media	2007-01-15	600	No	Cash	13.89%
124	Protect Data AB	Computer software	2006-11-20	460	No	Cash	17.97%
125	Custos AB	Industrial products and services	2006-11-08	137	No	Cash	11.80%
126	Semcon AB	Services (other)	2006-10-02	126	No	Cash	(9.34%)
127	Scania AB	Automotive	2006-09-18	13,077	No	Cash	23.93%
128	NEA Gruppen AB	Consumer: Other	2006-09-11	128	No	Cash	9.68%
129	Capio AB	Medical	2006-09-01	2,473	No	Cash	7.87%
130	Logica AB	Computer services	2006-08-21	1,318	No	Cash	7.96%

Appendix I - Continued

Event No.	Target Company	Target Company Industry	Announcement Date	Deal Value (EURm)	Mandatory Offer	Deal Structure	CAR (-60, -1)
131	Biacore International AB	Biotechnology	2006-06-20	352	No	Cash	28.29%
132	Netwise AB	Computer software	2006-06-05	34	No	Cash	(19.40%)
133	JC AB	Consumer: Retail	2006-05-09	222	No	Cash	8.82%
134	Consafe Offshore AB	Energy	2006-05-04	492	Yes	Share	(2.79%)
135	Gambro AB	Medical	2006-04-03	2,674	No	Cash	5.45%
136	LB Icon AB	Internet / ecommerce	2006-03-21	195	No	Share	1.52%
137	Digital Illusions CE AB	Computer software	2006-03-17	19	No	Cash	(17.57%)
138	Stralfors AB	Computer services	2006-03-14	241	No	Cash	(3.08%)
139	Resco AB	Computer services	2006-01-09	19	No	Cash	(5.06%)
140	Fastighets AB	Real Estate	2005-12-23	1,112	No	Cash	0.25%
141	OptiMail AB	Services (other)	2005-11-22	13	No	Cash	(3.38%)
142	Gamers Paradise Holding AB	Computer software	2005-10-17	38	No	Share	9.72%
143	Skandia AB	Financial Services	2005-05-13	4,808	No	Cash	(3.48%)
144	Karlshamns AB	Chemicals and materials	2005-07-12	218	No	Cash	19.25%
145	Intentia International AB	Computer software	2005-06-02	349	No	Share	(15.97%)
146	Riddarhyttan Resources AB	Mining	2005-05-12	98	No	Share	6.78%
147	Trio Enterprises AB	Computer software	2005-04-20	19	No	Share	6.66%
148	Fazer Konfektyr Service AB	Consumer: Foods	2005-02-17	436	Yes	Cash	(2.92%)
149	Sapa AB	Industrial products and services	2005-02-10	195	No	Cash	(2.97%)
150	North Atlantic Natural Resources AB	Mining	2004-12-30	21	Yes	Share	(10.06%)
151	TurnIT AB	Computer: Hardware	2004-12-22	27	No	Share	25.47%
152	Bulten AB	Automotive	2004-11-16	340	No	Cash	(31.07%)
153	Digital Illusions CE AB	Computer software	2004-11-15	23	No	Cash	(16.17%)
154	Gorthon Lines AB	Transportation	2004-10-07	30	No	Share	3.93%
155	Song Networks Holding AB	Telecommunications: Carriers	2004-09-14	544	No	Cash	4.05%
156	VLT AB	Media	2004-08-31	69	No	Cash	(3.96%)
157	Frango AB	Computer software	2004-08-24	40	No	Cash	(10.55%)
158	Fabege AB	Real Estate	2004-07-19	1,795	Yes	Cash	4.59%
159	RKS AB	Computer services	2004-05-06	10	No	Share	(25.48%)
160	LGP Allgon Holding AB	Telecommunications: Hardware	2003-12-01	357	No	Cash	28.39%
161	Pandox AB	Real Estate	2003-11-04	612	Yes	Cash	15.72%
162	Fastighets AB	Real Estate	2003-10-20	2,022	No	Cash	1.69%
163	Optovent AB	Medical	2003-07-15	6	No	Cash	116.17%
164	Perbio Science AB	Biotechnology	2003-06-26	653	No	Cash	22.88%
165	Fastighets AB	Real Estate	2003-06-13	15	No	Cash	15.69%
166	Biora AB	Medical	2003-04-07	39	No	Cash	(16.64%)
167	Mandamus AB	Real Estate	2003-03-20	136	No	Cash	0.04%
168	Mogul AB	Computer services	2003-02-28	6	No	Share	21.39%
169	Telenor Sverige AB	Telecommunications: Carriers	2003-02-05	528	No	Cash	6.44%
170	Allgon AB	Telecommunications: Hardware	2003-01-21	89	No	Share	47.43%
171	Epsilon AB	Computer services	2003-01-09	33	No	Cash	(8.67%)
172	Utfors AB	Computer software	2002-11-18	19	No	Cash	27.83%
173	Esselte AB	Manufacturing (other)	2002-05-24	612	No	Cash	30.98%
174	Realia AB	Real Estate	2002-04-23	463	No	Share	20.49%
175	Intelligent Micro Systems Data AB	Computer: Hardware	2002-02-18	9	No	Cash	30.63%
176	AU-System Aktiebolag	Computer software	2001-12-10	149	No	Share	26.16%
177	Scandinavia Online AB	Internet / ecommerce	2001-11-20	56	No	Cash	164.77%
178	AssiDoman AB	Agriculture	2001-10-10	3,126	No	Cash	6.34%
179	AF AB	Services (other)	2001-09-24	110	No	Cash	(5.15%)
180	Vision Park Entertainment AB	Computer software	2001-09-03	12	No	Cash	4.54%
181	Lundin Oil AB	Energy	2001-06-21	426	No	Cash	56.43%
182	Friluftsbolaget Ekelund & Sagner AB	Consumer: Other	2001-05-31	10	No	Cash	12.82%
183	Jobline International AB	Services (other)	2001-05-29	128	No	Cash	21.78%
184	Matteus AB	Financial Services	2001-05-17	14	No	Cash	35.57%
185	Lindab AB	Industrial products and services	2001-05-14	501	No	Cash	12.39%
186	Spendrups Bryggeri AB	Consumer: Other	2001-04-30	72	No	Cash	9.03%
187	Platzer Fastigheter AB	Real Estate	2001-04-06	310	No	Share	1.41%
188	E.ON Sverige AB	Energy	2001-02-21	814	Yes	Cash	37.17%
189	Atle Industri AB	Financial Services	2001-02-19	911	No	Cash	(8.86%)
190	Segerstrom & Svensson AB	Telecommunications: Hardware	2001-01-26	552	No	Share	(39.04%)
191	Artema Medical AB	Medical	2001-01-11	21	No	Share	12.82%
192	Stena Line AB	Transportation	2000-10-31	26	No	Cash	29.46%
193	Anders Dios AB	Real Estate	2000-09-27	224	No	Cash	12.98%
194	Bulten AB	Automotive	2000-09-21	100	No	Cash	9.79%
195	Arete AB	Computer services	2000-09-13	53	No	Cash	14.53%

Appendix I - Continued

Event No.	Target Company	Target Company Industry	Announcement Date	Deal Value (EURm)	Mandatory Offer	Deal Structure	CAR (-60, -1)
196	Resco AB	Computer services	2000-09-11	185	No	Share	50.84%
197	Gylling Optime Batteries AB	Industrial: Electronics	2000-08-30	69	No	Cash	(10.10%)
198	Allgon AB	Telecommunications: Hardware	2000-08-22	478	No	Share	(58.13%)
199	Fastighetsaktiebolaget Norrporten	Real Estate	2000-08-22	140	No	Cash	16.34%
200	IRO AB	Industrial products and services	2000-08-21	186	No	Cash	28.84%
201	Svedala Industri AB	Industrial products and services	2000-06-21	1,660	No	Cash	5.76%
202	Lifco AB	Medical	2000-06-15	37	No	Cash	(3.88%)
203	Entra Data AB	Computer software	2000-05-15	289	No	Share	2.85%
204	Folkebolagen AB	Services (other)	2000-05-08	18	No	Cash	32.00%
205	Perstorp Holding AB	Chemicals and materials	2000-04-10	1,158	No	Cash	19.25%
206	BT Industries AB	Automotive	2000-04-04	1,327	No	Cash	14.01%
207	Piren AB	Real Estate	2000-01-25	648	No	Cash	43.27%
208	Diligentia AB	Real Estate	2000-01-18	583	No	Share	(5.51%)
209	Althin Medical AB	Medical	1999-12-22	128	No	Cash	65.16%
210	Måldata Networks Solutions AB	Computer services	1999-12-16	47	No	Share	39.70%
211	Guide Konsult AB	Computer services	1999-12-03	174	No	Cash	11.39%
212	Celsius AB	Defence	1999-11-16	562	No	Cash	38.62%
213	N&T Argonaut AB	Transportation	1999-11-15	198	No	Cash	1.90%
214	Aga AB	Chemicals and materials	1999-08-16	3,524	No	Cash	14.54%
215	Thule AB	Automotive	1999-08-10	251	No	Cash	(2.13%)
216	Scania AB	Automotive	1999-08-06	6,444	No	Cash	5.27%
217	Sendit AB	Computer software	1999-05-12	122	No	Cash	26.46%
218	Scancem AB	Construction	1999-05-03	2,428	No	Cash	12.58%
219	ASG AB	Transportation	1999-04-26	373	No	Cash	14.49%
220	Asticus AB	Real Estate	1999-03-08	412	No	Cash	26.93%
221	Enator AB	Computer software	1999-03-03	952	No	Share	(6.32%)
222	PriFast AB	Real Estate	1999-03-01	167	No	Cash	41.40%
223	Dahl International AB	Industrial products and services	1999-02-11	301	No	Cash	(1.32%)
224	BTL AB	Transportation	1999-02-01	373	No	Cash	9.96%
225	Spectra-Physics AB	Chemicals and materials	1999-01-07	305	No	Cash	54.24%

B. Appendix II: CAAR development during the event window

The table reports the development of CAAR, proportion of bids with positive CAR, and run-up index for each trading day during the event window.

Trading days before announcement (t)	CAAR(-60, t)[a]	T-statistic	Proportion of bids with CAR(-60, t) > 0[b]	Run-up index
-60	(0.001)	(0.563)	0.449	(0.003)
-59	0.002	0.993	0.462	0.008
-58	0.002	0.758	0.462	0.007
-57	0.001	0.330	0.507	0.003
-56	(0.001)	(0.194)	0.453	(0.003)
-55	(0.002)	(0.394)	0.449	(0.007)
-54	(0.001)	(0.197)	0.436	(0.003)
-53	(0.001)	(0.120)	0.462	(0.002)
-52	(0.001)	(0.221)	0.436	(0.004)
-51	0.005	0.574	0.467	0.014
-50	0.004	0.432	0.467	0.011
-49	0.001	0.173	0.480	0.005
-48	0.006	0.624	0.480	0.017
-47	0.003	0.319	0.476	0.009
-46	0.007	0.790	0.511	0.021
-45	0.009	1.002	0.516	0.028
-44	0.009	0.877	0.533	0.027
-43	0.004	0.419	0.516	0.014
-42	0.012	1.105	0.542*	0.037
-41	0.013	1.268	0.569**	0.041
-40	0.012	1.112	0.547*	0.037
-39	0.013	1.193	0.564*	0.040
-38	0.014*	1.311	0.551**	0.042
-37	0.010	0.919	0.520	0.030
-36	0.008	0.729	0.529	0.024
-35	0.008	0.740	0.524	0.025
-34	0.010	0.879	0.524	0.031
-33	0.012	1.034	0.538	0.037
-32	0.010	0.830	0.511	0.031
-31	0.013	1.070	0.511	0.039
-30	0.015*	1.329	0.507	0.047
-29	0.016*	1.423	0.502	0.051
-28	0.013	1.163	0.520	0.042
-27	0.012	1.043	0.520	0.039
-26	0.014	1.161	0.507	0.043
-25	0.011	0.851	0.511	0.033
-24	0.011	0.874	0.520	0.034
-23	0.011	0.853	0.511	0.034
-22	0.014	1.128	0.502	0.044
-21	0.013	1.022	0.520	0.041
-20	0.013	0.992	0.498	0.040
-19	0.015	1.168	0.520	0.047
-18	0.018*	1.373	0.520	0.057
-17	0.017	1.254	0.516	0.053
-16	0.016	1.201	0.516	0.050
-15	0.015	1.068	0.520	0.046
-14	0.016	1.164	0.520	0.051
-13	0.019*	1.333	0.538	0.060
-12	0.022*	1.517	0.524*	0.070
-11	0.025**	1.668	0.547*	0.080
-10	0.034**	2.144	0.560**	0.106
-9	0.033**	2.119	0.538**	0.104
-8	0.037***	2.346	0.547**	0.116
-7	0.041***	2.611	0.587***	0.129
-6	0.042***	2.659	0.582***	0.131
-5	0.049***	3.056	0.587***	0.155
-4	0.055***	3.406	0.591***	0.173
-3	0.060***	3.760	0.578***	0.189
-2	0.067***	4.017	0.609***	0.211
-1	0.076***	4.452	0.631***	0.240
0	0.319***	13.690	0.893***	1.000
1	0.320***	13.609	0.889***	1.003
2	0.320***	13.533	0.898***	1.001
3	0.317***	13.284	0.884***	0.993
4	0.317***	13.170	0.889***	0.992
5	0.319***	13.184	0.889***	0.999
6	0.319***	13.095	0.889***	0.998
7	0.315***	12.889	0.871***	0.987
8	0.315***	12.835	0.871***	0.987
9	0.315***	12.775	0.867***	0.989
10	0.314***	12.599	0.862***	0.983

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level ([a] one-sided t-test for CAAR greater than 0, [b] one-sided Wilcoxon Signed Rank test for proportions greater than 0.5). Run-up Index equals CAAR(-60, t) / CAAR(-60, 0)*

C. Appendix III: Summary statistics per M&A advisor

The table reports an overview of the 20 most active financial advisors in the sample and the CAAR and proportion of bids with positive CAR for the bids in which each respective advisor is hired by the bidder.

Advisor No.	M&A Advisor	Median deal value (EURm)	CAAR(-60, -1)[a]	T-statistic	Proportion of bids with pre-bid run-ups[b]
1	International investment bank 1	2,674	0.103**	2.611	1.00**
2	International investment bank 2	1,824	0.408*	1.839	1.00*
3	International investment bank 3	1,337	0.151*	1.588	0.83*
4	Local investment bank 1	865	0.104	1.326	0.83
5	International investment bank 4	817	0.252**	3.769	1.00*
6	International investment bank 5	598	0.080	1.139	0.75
7	International investment bank 6	562	0.215**	3.075	1.00**
8	Local investment bank 2	541	0.058	0.852	0.71
9	International investment bank 7	374	0.121*	1.688	0.71
10	International investment bank 8	373	0.212*	1.660	0.80*
11	Local investment bank 3	333	0.131***	2.938	0.74***
12	Local investment bank 4	223	0.086***	2.705	0.73***
13	Local investment bank 5	218	0.041	1.034	0.48
14	Local investment bank 6	128	0.191**	1.985	0.74**
15	International M&A advisor 1	128	(0.007)	(0.166)	0.60
16	Local investment bank 7	82	0.102	1.303	0.80
17	Local M&A advisor 1	59	0.076	1.196	0.57
18	Local investment bank 8	36	(0.017)	(0.205)	0.17
19	Local investment bank 9	26	0.135	0.858	0.50
20	Local M&A advisor 2	22	(0.144)	(0.735)	0.25
Average	Top 20[c]	195	0.089	4.297	0.64
Average	Full sample[d]	126	0.076	4.452	0.63

*Note:*** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level ([a] one-sided t-test for CAAR greater than 0, [b] one-sided Wilcoxon Signed Rank test for proportions greater than 0.5). [c] Average across all bids in which one of the 20 advisors was hired by the bidder. [d] Average across all bids in the sample. Advisors above the dashed line are included in the Large group of advisors. Advisors named International investment bank are included in the LIIB group. Number of deals in the sample per advisor is excluded to entail anonymity of advisors*

D. Appendix IV: CAAR for the *Large* and *Non-Large* group

The table reports the development of CAAR for the *Large* and *Non-Large* groups as well as the difference in CAAR between the two groups for each trading day during the event window.

Trading days before announcement (t)	CAAR(-60, t) *Large* [a]	CAAR(-60, t) *Non-Large* [a]	Difference in CAAR(-60, t) [b]	T-statistic, difference in CAAR(-60, t)
-60	(0.004)	(0.001)	(0.003)	(0.646)
-59	(0.002)	0.003	(0.005)	(0.720)
-58	(0.007)	0.003	(0.010)	(1.086)
-57	(0.002)	0.001	(0.003)	(0.335)
-56	0.001	(0.001)	0.002	0.162
-55	0.005	(0.003)	0.008	0.481
-54	0.009	(0.002)	0.012	0.767
-53	0.013	(0.002)	0.016	0.951
-52	0.011	(0.003)	0.014	0.756
-51	0.015	0.003	0.012	0.636
-50	0.016	0.002	0.014	0.688
-49	0.019	0.000	0.019	0.957
-48	0.023	0.004	0.019	0.942
-47	0.027*	0.000	0.027*	1.337
-46	0.035**	0.004	0.031*	1.580
-45	0.043**	0.005	0.038**	1.833
-44	0.039**	0.005	0.033*	1.545
-43	0.038**	0.001	0.037**	1.783
-42	0.043**	0.008	0.034*	1.463
-41	0.046**	0.009	0.036*	1.602
-40	0.041**	0.008	0.033*	1.449
-39	0.042**	0.009	0.032*	1.376
-38	0.039**	0.011	0.028	1.238
-37	0.040**	0.006	0.034*	1.486
-36	0.050**	0.003	0.047**	1.933
-35	0.045**	0.004	0.041*	1.683
-34	0.051**	0.005	0.046**	1.744
-33	0.051**	0.007	0.044*	1.615
-32	0.048**	0.006	0.042*	1.535
-31	0.059**	0.007	0.052**	1.772
-30	0.055**	0.010	0.045*	1.573
-29	0.063**	0.011	0.052**	1.834
-28	0.056**	0.009	0.048*	1.677
-27	0.055**	0.007	0.048*	1.686
-26	0.058**	0.009	0.049**	1.723
-25	0.056**	0.005	0.051**	1.765
-24	0.053**	0.006	0.046*	1.566
-23	0.053**	0.006	0.047*	1.589
-22	0.050**	0.010	0.040	1.292
-21	0.056**	0.008	0.048*	1.584
-20	0.060**	0.007	0.052*	1.666
-19	0.064**	0.009	0.054**	1.717
-18	0.063**	0.013	0.05*	1.461
-17	0.067**	0.011	0.056*	1.589
-16	0.072**	0.010	0.062**	1.823
-15	0.079***	0.007	0.071**	2.072
-14	0.087***	0.008	0.079**	2.108
-13	0.106**	0.009	0.097**	1.985
-12	0.106**	0.013	0.092**	1.943
-11	0.107**	0.016	0.091**	1.921
-10	0.114**	0.025*	0.090**	1.824
-9	0.112**	0.024*	0.087**	1.776
-8	0.123***	0.027*	0.096**	1.949
-7	0.127**	0.031**	0.096**	1.755
-6	0.132***	0.032**	0.101**	1.887
-5	0.145***	0.038**	0.106**	1.918
-4	0.161***	0.043***	0.118**	2.039
-3	0.173***	0.048***	0.125**	2.205
-2	0.178***	0.055***	0.123**	2.184
-1	0.183***	0.064***	0.119**	2.125
0	0.394***	0.311***	0.083	1.190
1	0.398***	0.311***	0.087	1.231
2	0.400***	0.310***	0.089	1.256
3	0.403***	0.307***	0.096*	1.329
4	0.399***	0.307***	0.092	1.267
5	0.401***	0.309***	0.091	1.257
6	0.399***	0.309***	0.090	1.227
7	0.395***	0.306***	0.090	1.210
8	0.396***	0.306***	0.091	1.224
9	0.399***	0.306***	0.093	1.251
10	0.400***	0.304***	0.096	1.275

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a ([a] one-sided t-test for CAAR greater than 0 and [b] one-sided t-test for difference in group means)*

E. Appendix V: CAAR for the *LIIB* and *Non-LIIB* group

The table reports the development of CAAR for the *LIIB* and *Non-LIIB* groups as well as the difference in CAAR between the two groups for each trading day during the event window.

Trading days before announcement (t)	CAAR(-60, t) *LIIB* [a]	CAAR(-60, t) *Non-LIIB* [a]	Difference in CAAR(-60, t) [b]	T-statistic, difference in CAAR(-60, t)
-60	(0.005)	0.000	(0.005)	(1.231)
-59	(0.006)	0.004*	(0.010)	(1.767)
-58	(0.004)	0.004	(0.008)	(1.057)
-57	(0.001)	0.002	(0.003)	(0.369)
-56	(0.001)	(0.001)	0.000	0.001
-55	0.004	(0.003)	0.007	0.569
-54	0.004	(0.002)	0.006	0.495
-53	0.009	(0.003)	0.012	0.992
-52	0.006	(0.003)	0.009	0.700
-51	0.01	0.003	0.006	0.453
-50	0.014	0.001	0.012	0.823
-49	0.015*	(0.001)	0.017	1.120
-48	0.022**	0.002	0.020	1.256
-47	0.025**	(0.002)	0.027**	1.688
-46	0.034***	0.001	0.032**	1.981
-45	0.039***	0.003	0.036**	2.158
-44	0.043***	0.001	0.042**	2.454
-43	0.042***	(0.003)	0.045**	2.576
-42	0.049***	0.004	0.044**	2.302
-41	0.052***	0.005	0.047***	2.527
-40	0.049***	0.004	0.046***	2.398
-39	0.053***	0.004	0.049***	2.441
-38	0.052***	0.005	0.047**	2.337
-37	0.052***	0.001	0.051***	2.492
-36	0.050***	(0.001)	0.051**	2.330
-35	0.046***	0.000	0.046**	2.047
-34	0.048**	0.002	0.046**	1.906
-33	0.045**	0.005	0.040*	1.613
-32	0.035*	0.004	0.031	1.193
-31	0.051**	0.005	0.046**	1.703
-30	0.046**	0.008	0.038*	1.427
-29	0.056**	0.008	0.048**	1.797
-28	0.051**	0.006	0.045*	1.650
-27	0.051**	0.004	0.047**	1.695
-26	0.050**	0.006	0.044*	1.550
-25	0.050**	0.002	0.048**	1.701
-24	0.052**	0.002	0.050**	1.769
-23	0.056**	0.001	0.054**	1.941
-22	0.060***	0.005	0.055**	1.961
-21	0.063***	0.003	0.060**	2.054
-20	0.064***	0.002	0.061**	2.064
-19	0.066***	0.004	0.061**	2.045
-18	0.068***	0.007	0.061**	1.999
-17	0.075***	0.005	0.070**	2.246
-16	0.076***	0.003	0.072**	2.365
-15	0.078***	0.001	0.077***	2.500
-14	0.090***	0.001	0.089***	2.796
-13	0.109***	0.000	0.109***	2.911
-12	0.111***	0.004	0.107***	2.688
-11	0.109***	0.008	0.100***	2.643
-10	0.116***	0.017	0.099***	2.599
-9	0.113***	0.016	0.097***	2.494
-8	0.125***	0.018	0.107***	2.789
-7	0.132***	0.022*	0.109***	2.732
-6	0.136***	0.022	0.114***	2.925
-5	0.143***	0.030**	0.113***	2.787
-4	0.160***	0.033**	0.126***	3.009
-3	0.159***	0.040**	0.120***	2.871
-2	0.171***	0.046***	0.125***	2.940
-1	0.179***	0.055***	0.123***	2.894
0	0.432***	0.295***	0.136***	2.671
1	0.432***	0.296***	0.136***	2.650
2	0.435***	0.295***	0.139***	2.698
3	0.438***	0.291***	0.146***	2.820
4	0.434***	0.292***	0.142***	2.704
5	0.438***	0.294***	0.144***	2.739
6	0.439***	0.293***	0.145***	2.735
7	0.437***	0.289***	0.147***	2.746
8	0.438***	0.289***	0.149***	2.761
9	0.440***	0.289***	0.151***	2.780
10	0.443***	0.287***	0.156***	2.829

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a ([a] one-sided t-test for CAAR greater than 0 and [b] one-sided t-test for difference in group means)*

F. Appendix VI: Proportion of bids with positive CAR per group

The table reports the development of proportion of bids with positive CAR for the *Large*, *Non-Large*, *LIIB*, and *Non-LIIB* groups for each trading day during the event window.

Trading days before announcement (t)	Proportion of bids with CAR(-60, t) >0, *Large*	Proportion of bids with CAR(-60, t) >0, *Non-Large*	Proportion of bids with CAR(-60, t) >0, *LIIB*	Proportion of bids with CAR(-60, t) >0, *Non-LIIB*
-60	0.522	0.441	0.410	0.457
-59	0.304	0.480	0.282	0.500
-58	0.348	0.475	0.410	0.473
-57	0.478	0.510	0.564	0.495
-56	0.522	0.446	0.538	0.435
-55	0.609	0.431	0.564	0.425
-54	0.609	0.416	0.564	0.409
-53	0.565	0.450	0.538	0.446
-52	0.565	0.421	0.538	0.414
-51	0.565	0.455	0.564	0.446
-50	0.565	0.455	0.615*	0.435
-49	0.609	0.465	0.615*	0.452
-48	0.522	0.475	0.564**	0.462
-47	0.565	0.465	0.564**	0.457
-46	0.696**	0.490	0.641**	0.484
-45	0.696**	0.495	0.667***	0.484
-44	0.696**	0.515	0.692***	0.500
-43	0.652**	0.500	0.667***	0.484
-42	0.652**	0.530	0.667***	0.516
-41	0.696**	0.554	0.718***	0.538
-40	0.652**	0.535	0.667***	0.522
-39	0.652*	0.554	0.667***	0.543
-38	0.565*	0.550	0.615***	0.538
-37	0.522*	0.520	0.615***	0.500
-36	0.609**	0.520	0.615***	0.511
-35	0.565**	0.520	0.590**	0.511
-34	0.565**	0.520	0.615**	0.505
-33	0.565**	0.535	0.615**	0.522
-32	0.565*	0.505	0.590*	0.495
-31	0.522*	0.510	0.615**	0.489
-30	0.478*	0.510	0.590**	0.489
-29	0.478**	0.505	0.564**	0.489
-28	0.478*	0.525	0.564**	0.511
-27	0.522*	0.520	0.615**	0.500
-26	0.522*	0.505	0.590**	0.489
-25	0.478*	0.515	0.564**	0.500
-24	0.522*	0.520	0.590**	0.505
-23	0.565*	0.505	0.615**	0.489
-22	0.478*	0.505	0.615***	0.478
-21	0.565**	0.515	0.641***	0.495
-20	0.609**	0.485	0.641***	0.468
-19	0.565**	0.515	0.641***	0.495
-18	0.522*	0.520	0.615***	0.500
-17	0.565**	0.510	0.641***	0.489
-16	0.609**	0.505	0.667***	0.484
-15	0.696***	0.500	0.692***	0.484
-14	0.652***	0.505	0.718***	0.478
-13	0.696***	0.520	0.744***	0.495
-12	0.696***	0.505	0.692***	0.489
-11	0.783***	0.520	0.744***	0.505
-10	0.783***	0.535	0.769***	0.516
-9	0.783***	0.510	0.744***	0.495
-8	0.826***	0.515*	0.795***	0.495
-7	0.870***	0.554**	0.821***	0.538
-6	0.826***	0.554**	0.769***	0.543
-5	0.870***	0.554**	0.821***	0.538*
-4	0.870***	0.559***	0.846***	0.538**
-3	0.826***	0.550***	0.821***	0.527**
-2	0.870***	0.579***	0.846***	0.559***
-1	0.913***	0.599***	0.872***	0.581***
0	0.957***	0.886***	0.974***	0.876***
1	0.957***	0.881***	0.974***	0.871***
2	0.957***	0.891***	0.974***	0.882***
3	0.957***	0.876***	0.974***	0.866***
4	0.957***	0.881***	0.974***	0.871***
5	0.957***	0.881***	0.974***	0.871***
6	0.957***	0.881***	0.974***	0.871***
7	0.957***	0.861***	0.974***	0.849***
8	0.957***	0.861***	0.974***	0.849***
9	0.957***	0.856***	0.949***	0.849***
10	0.957***	0.851***	0.949***	0.844***

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level ([a] one-sided t-test for CAAR greater than 0, [b] one-sided Wilcoxon Signed Rank test for proportions greater than 0.5)*

G. Appendix VII: Regression outputs including year dummies

The table reports the estimated coefficients and their respective standard errors for equation XIV and equation XV, including year dummies, using OLS regression.

Variable	Equation XIV	Equation XV
Large M&A advisors (*Large*)	0.123**	
	[0.065]	
Large international investment banks (*LIIB)*		0.125***
		[0.053]
Cash	0.062	0.056
	[0.049]	[0.049]
ln(Deal value)	(0.006)	(0.009)
	[0.011]	[0.012]
Mandatory	(0.023)	(0.017)
	[0.053]	[0.054]
Constant	0.035	0.055
	[0.115]	[0.115]
2016	0.049	0.041
	[0.123]	[0.122]
2015	0.020	0.013
	[0.115]	[0.115]
2014	(0.087)	(0.098)
	[0.119]	[0.119]
2013	(0.016)	(0.015)
	[0.156]	[0.156]
2012	(0.029)	(0.030)
	[0.133]	[0.132]
2011	(0.008)	(0.006)
	[0.121]	[0.121]
2010	(0.164)	(0.175)
	[0.118]	[0.118]
2009	0.099	0.097
	[0.148]	[0.147]
2008	(0.079)	(0.091)
	[0.109]	[0.109]
2007	(0.030)	(0.034)
	[0.110]	[0.109]
2006	(0.054)	(0.049)
	[0.115]	[0.114]
2005	(0.050)	(0.048)
	[0.125]	[0.124]
2004	(0.101)	(0.116)
	[0.124]	[0.124]
2003	0.116	0.097
	[0.120]	[0.120]
2002	0.217	0.187
	[0.157]	[0.156]
2001	0.163	0.166
	[0.114]	[0.114]
2000	0.058	0.048
	[0.113]	[0.113]
1999	0.129	0.114
	[0.114]	[0.114]
Number of observations	225	225
Adjusted R^2	0.069	0.078

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level using a one-sided coefficient test*

H. Appendix VIII: Development of CAAR per robustness test

The table reports the development of CAAR for each trading date during the full event window for all robustness tests.

Trading days before announcement (t)	CAAR, 500, 60 Market Model	CAAR, 250, 30 Market Model	CAAR, 250, 60 Fama French 3	CAAR, 500, 60 Fama French 3	CAAR, 250, 60 Constant Mean	CAAR, 500, 60 Constant Mean
-60	(0.001)	n.a.	0.002	0.002	(0.001)	(0.001)
-59	0.002	n.a.	0.003	0.002	0.001	0.000
-58	0.002	n.a.	0.003	0.002	0.000	(0.001)
-57	0.001	n.a.	0.002	0.000	0.000	0.000
-56	(0.001)	n.a.	0.001	(0.001)	(0.002)	(0.003)
-55	(0.003)	n.a.	0.001	(0.001)	(0.002)	(0.003)
-54	(0.002)	n.a.	0.003	0.001	(0.002)	(0.003)
-53	(0.001)	n.a.	0.003	0.001	0.000	(0.001)
-52	(0.002)	n.a.	0.006	0.004	(0.004)	(0.006)
-51	0.004	n.a.	0.005	0.003	0.003	0.001
-50	0.003	n.a.	0.004	0.002	0.003	0.001
-49	0.001	n.a.	0.003	0.001	0.000	(0.002)
-48	0.005	n.a.	0.010	0.007	0.007	0.004
-47	0.002	n.a.	0.008	0.005	0.004	0.002
-46	0.006	n.a.	0.012	0.009	0.009	0.006
-45	0.008	n.a.	0.015*	0.012*	0.010	0.007
-44	0.008	n.a.	0.015*	0.012	0.010	0.007
-43	0.004	n.a.	0.009	0.006	0.007	0.004
-42	0.011	n.a.	0.015*	0.012	0.013	0.010
-41	0.012	n.a.	0.017*	0.013*	0.014	0.010
-40	0.011	n.a.	0.017*	0.014*	0.010	0.006
-39	0.012	n.a.	0.017*	0.014*	0.011	0.006
-38	0.012	n.a.	0.017*	0.014*	0.010	0.006
-37	0.008	n.a.	0.012	0.009	0.009	0.005
-36	0.006	n.a.	0.010	0.007	0.009	0.004
-35	0.006	n.a.	0.012	0.009	0.008	0.004
-34	0.008	n.a.	0.014	0.009	0.010	0.005
-33	0.010	n.a.	0.015	0.011	0.012	0.007
-32	0.008	n.a.	0.014	0.010	0.009	0.004
-31	0.010	n.a.	0.018*	0.013	0.012	0.007
-30	0.013	0.002	0.023**	0.018*	0.013	0.008
-29	0.014*	0.004	0.023**	0.017*	0.016	0.010
-28	0.011	0.001	0.020*	0.014	0.011	0.005
-27	0.010	(0.001)	0.019*	0.012	0.011	0.005
-26	0.011	0.001	0.020*	0.014	0.013	0.007
-25	0.008	(0.002)	0.019*	0.012	0.012	0.005
-24	0.008	(0.002)	0.020*	0.013	0.013	0.006
-23	0.008	(0.002)	0.020*	0.014	0.012	0.005
-22	0.011	0.001	0.023*	0.015	0.014	0.007
-21	0.010	0.000	0.021*	0.014	0.012	0.005
-20	0.009	(0.001)	0.022*	0.015	0.012	0.005
-19	0.012	0.002	0.025**	0.018*	0.014	0.006
-18	0.015	0.005	0.029**	0.022**	0.015	0.007
-17	0.013	0.003	0.027**	0.019*	0.014	0.006
-16	0.012	0.002	0.027**	0.019*	0.012	0.004
-15	0.010	0.001	0.026**	0.019*	0.013	0.004
-14	0.012	0.002	0.025*	0.018*	0.016	0.007
-13	0.015	0.005	0.028**	0.020*	0.019	0.010
-12	0.018*	0.009	0.031**	0.024*	0.023*	0.014
-11	0.021*	0.012	0.034**	0.026**	0.026*	0.017
-10	0.029**	0.020**	0.042***	0.034**	0.033**	0.024*
-9	0.028**	0.019*	0.042***	0.034**	0.034**	0.025*
-8	0.032**	0.023**	0.046***	0.038***	0.037**	0.028**
-7	0.036***	0.027**	0.051***	0.043***	0.042***	0.032**
-6	0.037***	0.028**	0.051***	0.043***	0.042***	0.032**
-5	0.044***	0.035***	0.058***	0.050***	0.050***	0.040***
-4	0.050***	0.041***	0.065***	0.057***	0.055***	0.045***
-3	0.055***	0.046***	0.071***	0.063***	0.062***	0.051***
-2	0.062***	0.053***	0.078***	0.070***	0.069***	0.058***
-1	0.071***	0.062***	0.087***	0.079***	0.078***	0.067***
0	0.313***	0.304***	0.333***	0.324***	0.321***	0.310***
1	0.314***	0.305***	0.334***	0.326***	0.323***	0.312***
2	0.314***	0.305***	0.334***	0.326***	0.322***	0.311***
3	0.310***	0.302***	0.331***	0.323***	0.319***	0.308***
4	0.311***	0.302***	0.332***	0.323***	0.319***	0.307***
5	0.313***	0.304***	0.333***	0.325***	0.321***	0.309***
6	0.312***	0.304***	0.332***	0.324***	0.318***	0.306***
7	0.308***	0.300***	0.327***	0.320***	0.315***	0.303***
8	0.308***	0.300***	0.329***	0.321***	0.315***	0.302***
9	0.309***	0.300***	0.327***	0.320***	0.315***	0.302***
10	0.307***	0.299***	0.326***	0.319***	0.313***	0.300***

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level from a one-sided t-test for CAAR greater than 0*

I. Appendix IX: Proportion of bids with positive CAR per robustness test

The table reports the development of the proportion of bids with positive CAR for each trading date during the full event window for all robustness tests.

Trading days before announcement (t)	Proportion, 500, 60 Market Model	Proportion, 250, 30 Market Model	Proportion, 250, 60 Fama French 3	Proportion, 500, 60 Fama French 3	Proportion, 250, 60 Constant Mean	Proportion, 500, 60 Constant Mean
-60	0.431	n.a.	0.500	0.472	0.440	0.404
-59	0.453	n.a.	0.436	0.450	0.449	0.436
-58	0.467	n.a.	0.440	0.417	0.418	0.404
-57	0.476	n.a.	0.468	0.468	0.453	0.440
-56	0.467	n.a.	0.468	0.440	0.449	0.458
-55	0.462	n.a.	0.454	0.450	0.453	0.444
-54	0.453	n.a.	0.436	0.436	0.458	0.449
-53	0.462	n.a.	0.436	0.450	0.489	0.471
-52	0.440	n.a.	0.463	0.463	0.467	0.436
-51	0.467	n.a.	0.445	0.463	0.489	0.471
-50	0.449	n.a.	0.440	0.436	0.511	0.480
-49	0.480	n.a.	0.431	0.459	0.511	0.493
-48	0.489	n.a.	0.440	0.477	0.502	0.493
-47	0.493	n.a.	0.472	0.463	0.533	0.511
-46	0.502	n.a.	0.505	0.491	0.547	0.538
-45	0.542*	n.a.	0.514	0.528*	0.524	0.524
-44	0.507	n.a.	0.514*	0.532**	0.560*	0.529*
-43	0.524	n.a.	0.518	0.541*	0.551*	0.524
-42	0.538*	n.a.	0.528**	0.564**	0.547*	0.520
-41	0.556**	n.a.	0.560**	0.550**	0.556*	0.529*
-40	0.578**	n.a.	0.532**	0.569**	0.547*	0.547
-39	0.578**	n.a.	0.528*	0.555**	0.529	0.520
-38	0.573**	n.a.	0.532*	0.569**	0.533	0.533
-37	0.542*	n.a.	0.495	0.546	0.524	0.529
-36	0.542*	n.a.	0.518	0.541	0.507	0.511
-35	0.542	n.a.	0.514	0.537*	0.507	0.493
-34	0.551*	n.a.	0.518	0.528	0.498	0.502
-33	0.538	n.a.	0.523	0.528	0.480	0.507
-32	0.511	n.a.	0.518	0.541	0.467	0.471
-31	0.560*	n.a.	0.532	0.569*	0.489	0.502
-30	0.542	0.436	0.518*	0.555**	0.471	0.502
-29	0.529	0.520	0.514	0.546*	0.507	0.493
-28	0.538	0.502	0.514	0.532	0.493	0.480
-27	0.533	0.498	0.509	0.528	0.502	0.489
-26	0.547	0.480	0.514	0.541	0.493	0.507
-25	0.538	0.489	0.509	0.518	0.498	0.507
-24	0.524	0.484	0.523	0.518	0.516	0.498
-23	0.524	0.471	0.509	0.509	0.516	0.493
-22	0.516	0.453	0.518	0.523	0.489	0.480
-21	0.511	0.484	0.514	0.532	0.493	0.484
-20	0.538	0.476	0.518	0.537	0.493	0.493
-19	0.533	0.471	0.514	0.537*	0.493	0.484
-18	0.524	0.484	0.532*	0.550*	0.489	0.489
-17	0.524	0.458	0.528	0.541	0.498	0.476
-16	0.520	0.453	0.514	0.546	0.498	0.484
-15	0.533	0.431	0.509	0.541	0.502	0.484
-14	0.547	0.444	0.518	0.532	0.502	0.498
-13	0.542	0.444	0.523	0.541	0.507	0.516
-12	0.542	0.449	0.523	0.518*	0.529	0.520
-11	0.542	0.462	0.546*	0.546*	0.524*	0.533
-10	0.551*	0.489	0.564**	0.564**	0.538**	0.520
-9	0.556**	0.484	0.550**	0.550**	0.547**	0.529*
-8	0.564**	0.493	0.578**	0.573**	0.556**	0.538*
-7	0.564***	0.511	0.578***	0.592***	0.569***	0.533**
-6	0.560**	0.516*	0.583***	0.573***	0.591***	0.542**
-5	0.564***	0.538**	0.596***	0.592***	0.591***	0.547**
-4	0.600***	0.547***	0.615***	0.624***	0.578***	0.547***
-3	0.604***	0.551***	0.610***	0.624***	0.596***	0.569***
-2	0.631***	0.587***	0.610***	0.633***	0.600***	0.587***
-1	0.640***	0.613***	0.619***	0.647***	0.618***	0.596***
0	0.902***	0.907***	0.858***	0.881***	0.867***	0.849***
1	0.898***	0.893***	0.862***	0.890***	0.858***	0.844***
2	0.902***	0.898***	0.862***	0.890***	0.853***	0.844***
3	0.893***	0.889***	0.849***	0.881***	0.844***	0.840***
4	0.898***	0.893***	0.844***	0.885***	0.844***	0.840***
5	0.907***	0.898***	0.849***	0.899***	0.844***	0.849***
6	0.902***	0.902***	0.849***	0.890***	0.836***	0.840***
7	0.898***	0.880***	0.839***	0.890***	0.827***	0.822***
8	0.893***	0.884***	0.835***	0.885***	0.831***	0.836***
9	0.893***	0.889***	0.835***	0.881***	0.822***	0.836***
10	0.893***	0.880***	0.830***	0.876***	0.818***	0.831***

*Note: *** denotes significance at a 1% level, ** at a 5% level, and * at a 10% level from a one-sided Wilcoxon Signed Rank test for proportions greater than 0.5*

J. Appendix X: Legal framework

When assessing the potential impact of undisclosed information leaking to certain market participants, it is of importance to be aware of the regulatory institutional context in the market that is being studied. In Sweden, the legal framework for governing trading with insider information, what is considered insider information, who is considered to be an insider and related queries is governed by The Market Abuse Regulation ("MAR") from the European Union. The definition of insider information according to Article 7 in MAR is:

"Information of a precise nature, which has not been made public, relating, directly or indirectly, to one or more issuers or to one or more financial instruments, and which, if it were made public, would be likely to have a significant effect on the prices of those financial instruments or on the price of related derivative financial instruments"

In short, people in possession of insider information, or persons closely associated are under strict regulations prohibited from insider dealing, i.e. using the information in any way to extract value from its informational content (Article 8, MAR). Further, the issuer should according to Article 18 1 (a) in MAR:

"Draw up a list of all persons who have access to inside information and who are working for them under a contract of employment, or otherwise performing tasks through which they have access to inside information, such as advisers, accountants or credit rating agencies".

When insider information is to be published, the act of making it available to the public is regulated by The Commission Implementing Regulation (EU) 2016/1055 ("CIR") and Article 2 states that:

"*Issuers and emission allowance market participants shall disclose inside information using technical means that ensure:*

1. *that insider information is disseminated: to as wide a public as possible on a non-discriminatory basis; free of charge and simultaneously throughout the Union*
2. *inside information is communicated, directly or through a third party, to the media which are reasonably relied upon by the public to ensure its effective dissemination. That communication shall be transmitted using electronic means that ensure that the completeness, integrity and confidentiality of the information is maintained during the transmission, and it shall clearly identify: that the information communicated is inside information; the identity of the issuer or emissions allowance market*

participant: full legal name; the identity of the person making the notification: name, surname, position within the issuer or emission allowance market participant; the subject matter of the insider information and the date and time of the communication to the media

Issuers and emission allowance market participants shall ensure the completeness integrity and confidentiality by remedying any failure or disruption in the communication of inside information without delay."